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ABSTRACT

The overall purpose of the Occupational Training Information System (OTIS) is to provide improved data for evaluating recommended changes in Oklahoma's State Plan for Vocational Education. In addition to matching manpower supply and demand to show net demand, the project includes components and cost analysis, a followup, underdeveloped human resources, and sociopolitical involvements between different agencies with similar goals. This final report contains recommendations for improvements in the information system, in addition to recommendations for improving occupational training in Oklahoma. Detailed documentation for making OTIS fully operational is contained in the appendixes, with sufficient information to duplicate the system elsewhere. (BH)

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OCCUPATIONAL TRAINING INFORMATION SYSTEM

OTIS

FINAL REPORT complete with System Documentation

June 30, 1970

By

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with

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and

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
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Manpower Administration, United States Department of Labor
Oklahoma Industrial Development and Park Department
Ozarks Regional Commission
Research Foundation, Oklahoma State University

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Manpower Research and Training Center,
  Oklahoma State University
Oklahoma Association of Private Schools
Oklahoma Employment Security Commission
Research Coordinating Unit,
  Oklahoma State Department of Vocational and
  Technical Education
School of Occupational and Adult Education
  Oklahoma State University

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Several agencies have made specific contributions to this project, i.e. State Department of Vocational and Technical Education; Manpower Administration, United States Department of Labor; Oklahoma Employment Security Commission; Oklahoma Industrial Development and Park Department; Oklahoma Association of Private Schools; and the Manpower Research and Training Center, School of Occupational and Adult Education, Research Coordinating Unit, and the Research Foundation at Oklahoma State University. Besides Dr. Choate and Mr. Appley, special mention must be made here of Drs. Francis Tuttle, William Stevenson, William Frazier, Charles Hopkins, Messrs. Arch Alexander, J. Gordon Pulliam, Ronald Meek, Byrle Killian, William Randolph, and Gene Thaxton from the State Department of Vocational and Technical Education and Mssrs. Morris Leonard, Will Bowman, Robert Turner, William

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*Dr. Paul V. Braden, Acting Director, School of Occupational and Adult Education was chairman of the OTIS Advisory Committee 8-69 through 1-70.

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FOREWORD

This study of manpower requirements and occupational programs in Oklahoma was initiated in August of 1968. This final report is designed to assist manpower planners in the establishment and implementation of manpower strategies. The report contains system documentation in order that OTIS might be made fully operational in Oklahoma and to facilitate its adaption by other states or groups of states.

The central purpose of this project was to assist state officials of Oklahoma in planning and developing a statewide occupational training information system as an integral part of a planned manpower development program. This study contains detailed information on the State's public and private occupational programs. The enrollments in these programs are matched with data on existing manpower needs. The U. S. Office of Education Program Codes and the Dictionary of Occupational Titles were used to facilitate this matching.

This report includes a discussion of the problem under study, overall procedures, a matching of manpower requirements, enrollments in occupational programs in Oklahoma, the present ipact and future direction of the system in Oklahoma, and major findings and recommendations. It is sincerely hoped that the information and suggestions in this final report will be useful in shaping manpower policy in Oklahoma and elsewhere.

Dr. John C. Shearer, Director
Manpower Research and Training Center
Oklahoma State University

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SUMMARY, MAJOR FINDINGS AND POLICY RECOMMENDATIONS

In summarizing the findings and presenting the recommendations of the Occupational Training Information System (Hereafter referred to as OTIS), an effort will be made to separate those findings and recommendations that are related to improving the information system from those relating to improving Oklahoma's occupational training program mix. Therefore, this section of the report will be divided into the following parts: (1) Purpose of the Study; (2) Background Information; (3) Brief Review of Methodology; (4) Findings and Recommendations Related to Improving the Information System; (5) Findings and Recommendations Related to Improving the Occupational Training Program Mix. Number five above is restricted primarily to the full-time public training programs since they (1) represent the major portion of publicly supported manpower supply and (2) the public sector would seem to be the most responsive to statewide manpower policy. Efforts have been made not to infringe in the decision-making domain of those whose responsibility it is to make or modify manpower policy in Oklahoma. In this regard analyses relating to improving the occupational training program mix have been termed exemplary (illustrative) and the OTIS staff suggests that feedback on this data and analysis be a normal expectation of the system.

Purpose of the Study

The overall purpose of this project was to develop and initiate a continuous and detailed Occupational Training Information System (OTIS), to provide a better data base for encouraging necessary changes in Oklahoma's State Plan for Vocational Education and in consequent patterns of occupational offerings and enrollments. These changes should follow the directions set forth in the Vocational Education Amendments of 1968.

Background Information

It has become apparent in Oklahoma that if existing manpower training and related agencies are to make their maximum contribution to the development of human resources in the seventies, intensive efforts must be made in the direction of statewide manpower planning. The recognition of the need for statewide manpower planning is manifested in the Federal and State legislative acts and in the establishment of coordinating committees and commissions in Oklahoma and the nation. However, the need remained for the development and demonstration of an effective information system and related procedures for implementing statewide manpower planning.

In Oklahoma two studies were completed in 1967 which explored the need for statewide manpower planning, one by Ling-Temco-Vought Systems Management Service and the other by Oklahoma State University. These studies were oriented toward identifying the actions and sequencing necessary for the establishment of a flexible occupational training system that could provide skilled manpower to satisfy the state's present and future demands. One of the principal recommendations made was the establishment of a system to provide continuous detailed information for policy and operational decisions on a statewide basis. This recommendation was based primarily on the following needs:

1. Introduction of systematic and continuous demonstration and evaluation to replace a history of sporadic and isolated research activity.

2. Development of interagency coordination and commitment based on the premise of greater returns to all.
3. Establishment of new data linkages to replace inadequate information gathering and processing utilized for some manpower policy decisions.
4. Statement of objective criteria and guidelines for assessing the relevance of vocational and technical programs to replace subjective standards wherever possible.

In the spring of 1968 representatives from the Research Department of the Industrial Development and Park Department, the State Department of Vocational and Technical Education, and the Oklahoma Employment Security Commission met to discuss the need for a statewide research and demonstration project which could bring maximum resources to bear on implementing a strategy for economic development which had as its major premise the development of a skilled labor force. Subsequently, the Manpower Research and Training Center at Oklahoma State University was approached to react in detail as to the feasibility of such a project. In July of 1968 a proposal was submitted to the concerned agencies, whereupon the State Department of Vocational and Technical Education and the Industrial Development and Park Department agreed to preliminary funding of the project. Cooperation was provided by the Oklahoma Employment Security Commission and the Association of Private Schools.

In August of 1968 the Director and two graduate students initiated the project. They were joined by some staff-release-time personnel from the State Department of Vocational and Technical Education. The cycle I report, which served as a prototype, was published in late January of 1969 (6 months after initiation). The OTIS information is collected, analyzed and disseminated on a yearly basis. The reports are released in January of each year. These reports are referred to as cycle reports, e.g. Cycle I was released in January 1969, Cycle II in January 1970, and Cycle III is anticipated in January 1971. In March of 1969, full funding was provided with major sponsorship by the State Department of Vocational and Technical Education; the Manpower Administration, U. S. Department of Labor; and the Ozarks Regional Commission. A great deal of cooperation was received throughout the project from the Oklahoma Employment Security Commission; Oklahoma Association of Private Schools; Manpower Research and Training Center, School of Occupational and Adult Education, and Research Coordinating Unit, Oklahoma State University; and the State Department of Vocational and Technical Education.

Brief Review of Methodology

Detailed documentation for operationalizing or replicating OTIS can be found in Appendices A through I. The project was designed to have six components i.e., manpower supply, manpower demand, cost, follow-up, underdeveloped human resources, and socio-political involvements.

The basic concept of OTIS is shown in Figure 5 on page 17. This figure indicates the direction which the flow of information must assume in order for decision makers to utilize OTIS data in planning for vocational and technical education. The system is designed to interface (match) supply and demand information for sub-professional occupations. The design calls for cycling of the system on a yearly basis in order to provide program information in time to affect a large portion of program "starts" and "stops" which tend to occur in the fall of the year particularly in the public sector.

Findings and Recommendations Related to Improving the Information System

Finding

The supply component of the information system concentrated on programs in the full-time public and adult reimbursed areas along with private programs, manpower development and training act programs, selected on-job-training programs and the registrants at the Oklahoma Employment Security Commission. The above supply sources are not exhaustive.

Recommendation

The manpower supply sources to be reported in cycle III (February 1970 to January 1971) should be expanded, where possible, to include Concentrated Employment Programs, Community Action Programs, Job Opportunities in the Business Sector Programs (National Alliance of Businessmen), New Careers, Mainstream, and Opportunities Industrialization Center.

Finding

Vocational educators, as well as industrial representatives, prefer that demand data be collected on a "by establishment" basis so that specific occupational information may be obtained. The collection, analysis, and dissemination of these data, although not without methodological problems, has been well received by training officials. The employing organizations did not object to the information being released to the training officials as is commonly expected. Industrial Training Coordinators are being employed in Oklahoma's Area Vocational-Technical Schools to act as liaison between the school and employer representatives. These industrial training coordinators were found to be willing and able demand data collectors. However, it was found that the Employment Security Commission played a vital role in the design, editing and analysis of the demand data subsystem.

Recommendation

Future manpower demand estimate surveys by OTIS in Oklahoma should continue to utilize the "by establishment" format. These surveys should be made by vocational and technical industrial training coordinators in conjunction with labor market analysts from Employment Security Commissions. The Oklahoma Employment Security Commission has agreed to conduct labor market surveys on a contract basis in a confidential or non-confidential format as the case may require.

The following factors should be considered:

1. Data collectors should be aware of both demand data collection procedures and the needs of vocational and technical education.
2. Once the demand information is collected, the Employment Security Commission should edit these data.
3. The Employment Security Commission should be responsible for assigning both Standard Industrial Classification codes to each establishment and Dictionary of Occupational Title Codes to those occupations which have not already been so identified.
4. The demand information collected from various standard Industrial Classification sectors should serve as a basis for updating records yearly, and the contacts made should serve as a liaison between industrial representatives and vocational and technical education personnel.

Finding

Dropout and placement rates relate to the number and quality of graduates available for the labor market.

Recommendation

Student characteristics, particularly student interests, should be investigated thoroughly in terms of the relationship to program success, job satisfaction, and employer satisfaction.

Finding

Some of the computer software needed to fully automate the OTIS project is not presently available. This was due, in part, to a short developmental phase. The project was fully funded in March of 1969 and became operational in January of 1970 under the direction of the State Department of Vocational and Technical Education.

Recommendation

Cycle III, February 1, 1970 to January 31, 1971, should give high priority to the development of additional software to process and analyze data and facilitate data retrieval.

Finding

The original project proposal and the OTIS Advisory Committee identified a need for an underdeveloped human resources study. Subsequently, the Tulsa Chamber of Commerce, the State Vocational and Technical Department, the Industrial Development and Park Department and OTIS joined forces to launch such a study.

Recommendation

From an analysis of preliminary findings, the underdeveloped human resources study now underway in the Tulsa area should be considered a pilot study for possible later extension to the entire state. In addition, the data should be collected, analyzed, and disseminated on a yearly basis. The major findings should be integrated into the OTIS Cycle Report in January of each year.

Finding

Home Economics (Useful) does not have program objectives which are labor market oriented and therefore was not analyzed in depth during cycle II.

Recommendation

New techniques should be developed during cycle III (February 1970 to January 1971) to analyze the Home Economics (Useful) program service division.

Finding

The vocational and technical teachers and employers resist data collection attempts until the usefulness of such data is demonstrated.

Recommendations

1. Special effort should be made during cycle III to design more reports useful to individual instructors.
2. The cycle II OTIS report should receive full dissemination and evaluation through a series of workshops and at the annual

Statewide Vocational and Technical Education Teachers Conference in August, 1970. Subsequent cycle reports should follow this dissemination pattern.

Finding

The private schools contribute significantly to Oklahoma's manpower supply picture. The Oklahoma Association of Private Schools, which was attempting to provide a mechanism for coordinating private training programs, was in its formative stage during cycle II of the OTIS project. Now that the new law has been passed (See Appendix J) requiring all private schools to be licensed, real progress is expected in data collection, analysis and decision-making on a statewide basis.

Recommendation

It is important that continuing efforts be made to encourage continuous growth of this association so that their influence and resources can be utilized to coordinate data collection and dissemination among various private schools.

Finding

The interfacing of supply and demand clusters carries with it the assumption that the job and training programs are accurately matched. This assumption has now been empirically tested and found to be accurate in 70 out of the 93 hypothesized clusters utilized in the cycle II report.

Recommendations

The 93 clusters utilized in interfacing manpower supply and demand in cycle II report should, with a few exceptions, be utilized in cycle III.

Additional clusters should be added where appropriate. The clusters which need modification are only a few in number.

Finding

The OTIS Advisory Committee has demonstrated the usefulness of having an information system which deeply involves decision makers.

Recommendations

1. The OTIS Advisory Committee should be maintained.
2. Meetings should be held with the Advisory Committee to determine the acceptable limits on the OTIS framework for analysis. For example, out-migration has been identified as a factor in the graduate available rate. What constitutes an acceptable out-migration rate?
3. All interagency relationships established during the conceptual and developmental phases of the system should be reviewed in light of any changes in working relationships and responsibilities. Interagency agreements should be established which identify the role of the agencies, including details on the functional and physical interface, support, documentation, constraints, manpower, equipment, facilities, materials and data which the agencies will need to assist in the performance of their role(s).

Finding

Present reporting procedures related to cost data are not sufficiently refined for needed inputs into the system.

Recommendation

A better method be established to examine the cost per student and per program. This should be accomplished in all supply sectors.

Finding

Difficulty was experienced by the OTIS staff in analyzing student records due to a lack of unique identification numbers. Although this problem was of minor importance during cycle II, it could affect long run reliability of the system output.

Recommendation

All students who enter vocational and technical programs should be encouraged to obtain Social Security numbers as a normal part of enrollment procedures. This number will be used as common identification number throughout relevant system records.

Finding

Data on the two follow-up studies utilized in cycle II were difficult to assess in relation to their suitability to the follow-up component. Both the direct (student) and indirect (teacher) follow-ups were valuable to the calculation of placement rates.

Recommendation

Further research relating to design of future follow-up studies should be conducted to determine whether teachers or students provide the most accurate information and the results of this study given serious consideration when deciding what follow-up method or combination of methods to be used.

Finding

OTIS has had its greatest impact on macro-manpower planning, e.g., the state plan for vocational-technical education and interagency cooperation. This does not discount the effects of OTIS on local school districts such as those which have area vocational-technical schools.

Recommendation

Cycle III and subsequent cycles ought to be concerned with more micro-analysis particularly increased occupational analysis of critical employment areas as well as instructional changes in the classroom based on performance objectives derived from occupational analysis. In addition, efforts should be made in cycle III to employ decision-making techniques at the local level such as the setting of tolerable limits on variables such as dropout and migration rates.

Findings and Recommendations Related To Improving the Occupational Training Program Mix

The findings and recommendations which follow relate to full-time public training and are suggestive to Oklahoma's decision-makers who affect manpower policy. In no way is any of the findings and recommendations intended to infringe upon the decision-making domain of co-sponsoring or cooperating agency personnel.

Finding

The overall dropout rate in Health Education was found the lowest (12) among the seven program service divisions. The highest rate of dropout was reported by Home Economics (Useful) at 75. The others were Technical and Trade and Industrial 58 each, Vocational Agriculture 55, Distributive Education 36, Office Education 29 and Home Economics 23.

The rate of graduates available for placement in Oklahoma again is the highest for Health Education (79.2 percent). Others reporting placement rate in descending order are Trade and Industrial 50.2 percent, Office Education 47.9 percent, Distributive Education 40.6 percent, Vocational Agriculture 28.3 percent, Technical Education 27.2 percent, and Home Economics (Gainful) 27.0 percent.

Recommendation

Program service divisions which had relatively low dropout rates and relatively high graduate availability and placement rates should be studied further in order to determine if the overall procedures being utilized to achieve these rates can be applied to the other program service divisions. The Health Education program service division had the lowest dropout rate and the highest graduate availability and placement rates.

Finding

Role of education and especially vocational education in helping the disadvantaged and the handicapped cannot be over emphasized. It was found that the participation rate of the disadvantaged was the highest in Trade and Industrial Education among all the seven program service divisions. Others following in order were found to be Home Economics, Vocational Agriculture, Health Education, Office Education, Technical Education and Distributive Education.

Recommendation

Program service divisions which had a relatively high percentage of disadvantaged persons enrolled should be studied further in order to determine the factors responsible for the high participation rate and the applicability of these factors to the other program service divisions. The Trade and Industrial program service division had the highest rate of participation for the disadvantaged.

Finding

On the basis of the analysis in Chapter III, Part III, it was found that Technical Education was oversupplying the manpower needs of Oklahoma. On the basis of supply and demand information and available data on cost and other parameters there was room for readjustment of the program mix.

Recommendation

The full-time public program mix should be changed in light of the findings in the exemplary analyses. This would mean a decrease in the funds allocated to the Vocational Agriculture and Technical Education program service divisions and an increase in funds for Distributive Education, Health Education, Home Economics (Gainful), Office Education, and Trade and Industrial Education. These recommended changes, however, must be reviewed in the broader framework of national and regional occupational employment trends and the long term plans for industrialization needs in Oklahoma.

Finding

Inadequacy and unavailability of data was a limiting factor in the use of parameters other than those discussed in Chapter III, Part III.

Recommendation

Cycle III of OTIS (February 1971 through January 1971) should consider the inclusion of additional parameters for the analysis of Oklahoma's program mix. For example, aptitudes and interests of potential students; intrastate and interstate mobility patterns; and the general administrative parameters such as physical plant utilization, etc.

CHAPTER I

INTRODUCTION

Though this report deals in general with statewide manpower planning, specifically it concerns Oklahoma's development and operation of Occupational Training Information System (Hereafter referred to as OTIS). It provides a description of OTIS's unique aspects; development history; basic procedures with documentation; exemplary analysis, findings and recommendations; and its present impact and future direction. Aspects of the system which might have implications for states other than Oklahoma have been emphasized wherever necessary.

This report is timely in that little progress has been made in the development of solid "top management information systems" and this is particularly true about information systems designed to aid in planning for statewide vocational and technical education. However, Oklahoma has developed a comprehensive, statewide, and continuous system for matching manpower supply and demand which represents a basic step in the direction of active manpower policy. It is currently providing information on the supply of and the demand for sub-professional manpower which is basic for improving decision making relative to effective manpower utilization.

Oklahoma moved in the direction of an information system for better coordination of manpower training decision making even before the 1969 introduction in the U. S. Congress of legislation aimed at comprehensive statewide manpower planning. This movement started when it was realized that efforts to formulate a rational and useful state plan for the identification, development, and implementation of those manpower programs most appropriate to Oklahoma's circumstances would be exercises in futility, pleasing only those who value a plan as an end in itself, unless it was built on an adequate data base.

Historical Development

It became apparent in Oklahoma that if existing manpower training and related agencies were to make their maximum contribution to the development of human resources in the seventies, intensive efforts had to be made in the direction of statewide manpower planning. The recognition of the need for statewide manpower planning was manifested in Federal and state legislation and in the establishment of coordinating committees and commissions in Oklahoma and the rest of the nation. However, the need remained for the development of an effective information system and related procedures for implementing statewide manpower planning.

In Oklahoma two studies were completed in 1967 which explored the need for statewide manpower planning, one by Ling-Temco-Vought Systems Management Service[1] and the other by Oklahoma State University.[2] These studies were oriented toward identifying the actions and procedures necessary for the establishment of flexible occupational training systems geared to the state's present and future demands for skilled manpower. One of the principal recommendations made was the establishment of a system to provide continuous detailed information for policy and operational decisions on a statewide basis. This recommendation was based primarily on the need for:

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[1] Ling-Temco-Vought, Inc. (Prime Contractor), Systems Management Services, Vocational and Technical Skills and Literacy Systems. Report II: Washington, D.C.: Ozarks Regional Commission, December, 1967.

[2] Roney, Maurice W., and Paul V. Braden, Occupational Education Beyond the High School in Oklahoma, Stillwater, Oklahoma: The Research Foundation, Oklahoma State University, January, 1968.

1. the introduction of systematic and continuous demonstration and evaluation to replace a history of sporadic and isolated research activity,
2. the development of interagency coordination and commitment based on the premise of greater returns to all to replace the status quo,
3. the establishment of new data linkages to replace decision-making based on inadequate information, and
4. the establishment of acceptable criteria and guidelines for assessing the relevance of vocational and technical programs to replace subjective standards.

In the spring of 1968 representatives from the Research Department of Oklahoma's Industrial Development and Park Department, the State Department of Vocational and Technical Education, and the Employment Security Commission met to discuss the need for a statewide research and demonstration project which could bring maximum resources to bear on implementing a strategy for economic development which had as its major premise the development of a skilled labor force. Subsequently, the Manpower Research and Training Center at Oklahoma State University was approached to explore the feasibility of such a project. In July of 1968 a proposal was submitted to the concerned agencies, whereupon the State Department of Vocational and Technical Education and the Industrial Development and Park Department agreed to preliminary funding of the project with active cooperation from the Oklahoma Employment Security Commission and the Oklahoma Association of Private Schools.

The overall purpose of this project was to provide data on which to base decisions relative to changes in the State Plan for Vocational Edcation in Oklahoma. These changes, it was agreed, should follow the directions set forth in the Vocational Education Amendments of 1968[3] resulting in new patterns of occupational offerings.

Oklahoma's Occupational Training Program Mix

Oklahoma's strategy for economic development has as one of its major premises the development of a skilled labor force; therefore, it became important to carefully examine the allocation of resources among the various occupational training program areas.

Oklahoma's occupational program mix is primarily comprised of public and private formal school settings although training at industrial and government installations is gradually becoming more important in the total picture. The components of Oklahoma's trained manpower supply will be reviewed in Chapters II and III. However, since the federally reimbursed occupational training programs are the most subject to change through governmental policy and processes they have commanded primary attention in this project.

Oklahoma's enrollment in federally reimbursed programs from 1965 to 1969 are shown in Figure 1. In 1965, the distribution showed 74 percent of enrolled students in Agriculture and Home Economics, two percent in Distribution and Marketing, and five percent in Technical programs. Four years later, in 1969, the percentage of enrollments in Agriculture and Home Economcis had decreased to 65 percent in addition to a considerable shift from Production Agriculture to Off-Farm Agriculture and from Home Economics-Useful to Home Economics-Gainful. Every other program service

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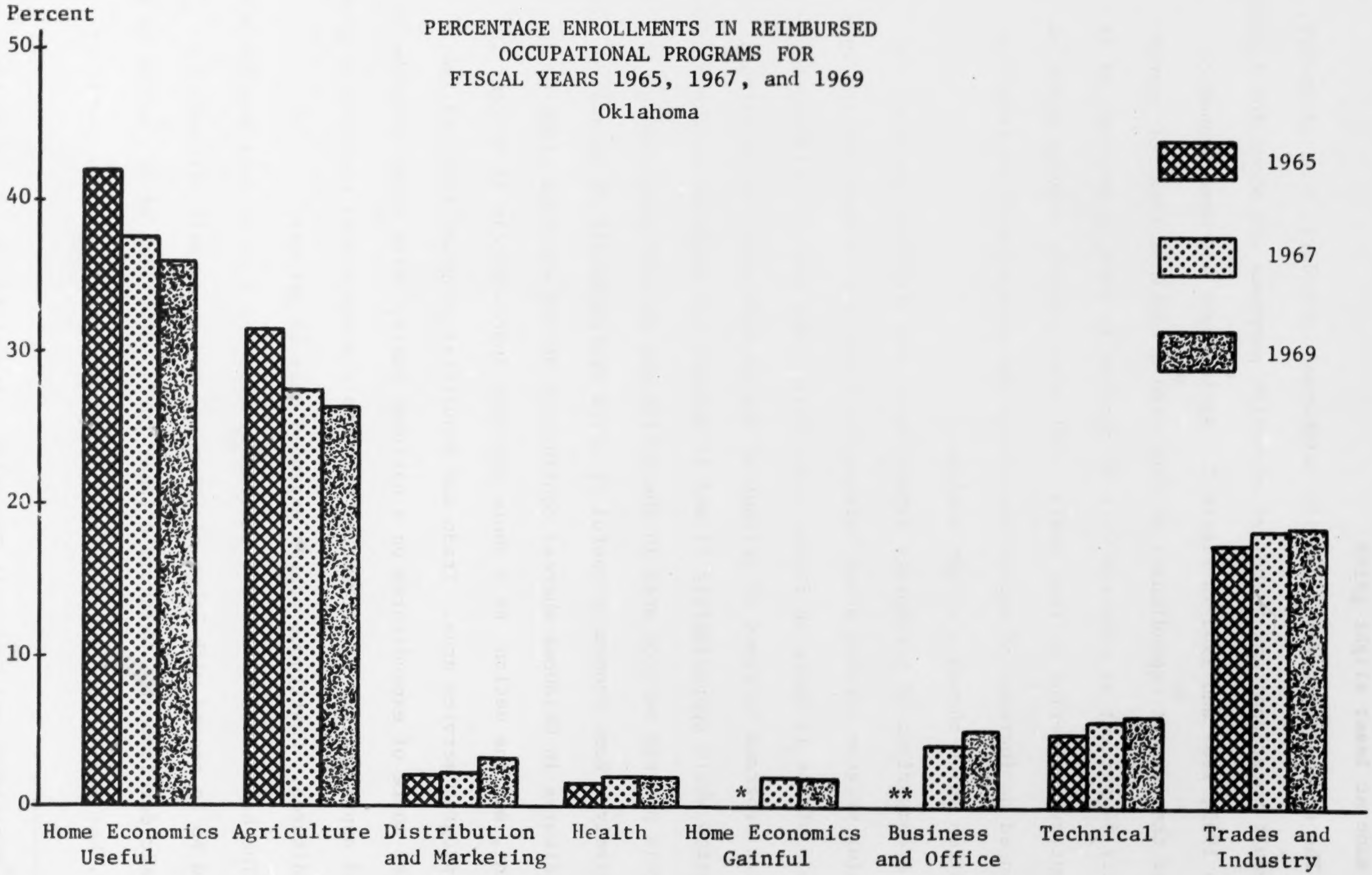
[3] U. S. Congress, Public Law 90-576, 90th Congress, H. R., 18366, Washington, D. C.: U. S. Government Printing Office, October 16, 1968.

Figure 1.

PERCENTAGE ENROLLMENTS IN REIMBURSED
OCCUPATIONAL PROGRAMS FOR
FISCAL YEARS 1965, 1967, and 1969
Oklahoma



PROGRAM SERVICE AREAS

* No enrollments in Home Economics Gainful until 1967.
** No classes funded until fiscal year 1966.
Source: Oklahoma State Department of Vocational and Technical Education.

area made at least slight gains.

The expenditures for federally reimbursed secondary, post-secondary, and adult vocational and technical education programs are shown for fiscal years 1965, 1967 and 1969 in Figure 2. Agriculture and Home Economics showed the largest expenditures in 1965 with a combined total of approximately 64 percent as compared with 45 percent in 1969, a decrease of 19 percent over a period of four years. All other program service areas experienced an increase of expenditures with the exception of Distributive Education which showed a slight decline.

A comparison of percentage expenditures for different occupational training program service areas between Oklahoma, the nation, and the contiguous states is shown in Figure 3 utilizing 1966 data.[4] Oklahoma agriculutre programs received 27 percent of the expenditures for vocational education while approximately 11 and 12 percent was expended on the average for this program service area in the nation and in contiguous states respectively. Home Economics-Useful received approximately 18 percent of the expenditures in Oklahoma whereas continguous states expended close to 20 percent, and the nation as a whole expended approximately 12 percent in this program service area. Trade and Industrial programs received the largest share of expenditures on a national basis, while these programs received approximately 17 percent of Oklahoma's occupational training program expenditures. Contiguous states expended only 10 percent.

The balance of Oklahoma's publically financed occupational program mix should be in accord with labor market needs and an overall strategy for economic development. Oklahoma's labor force, like that of the nation as a whole, has experienced rapid changes in size, composition, and character.

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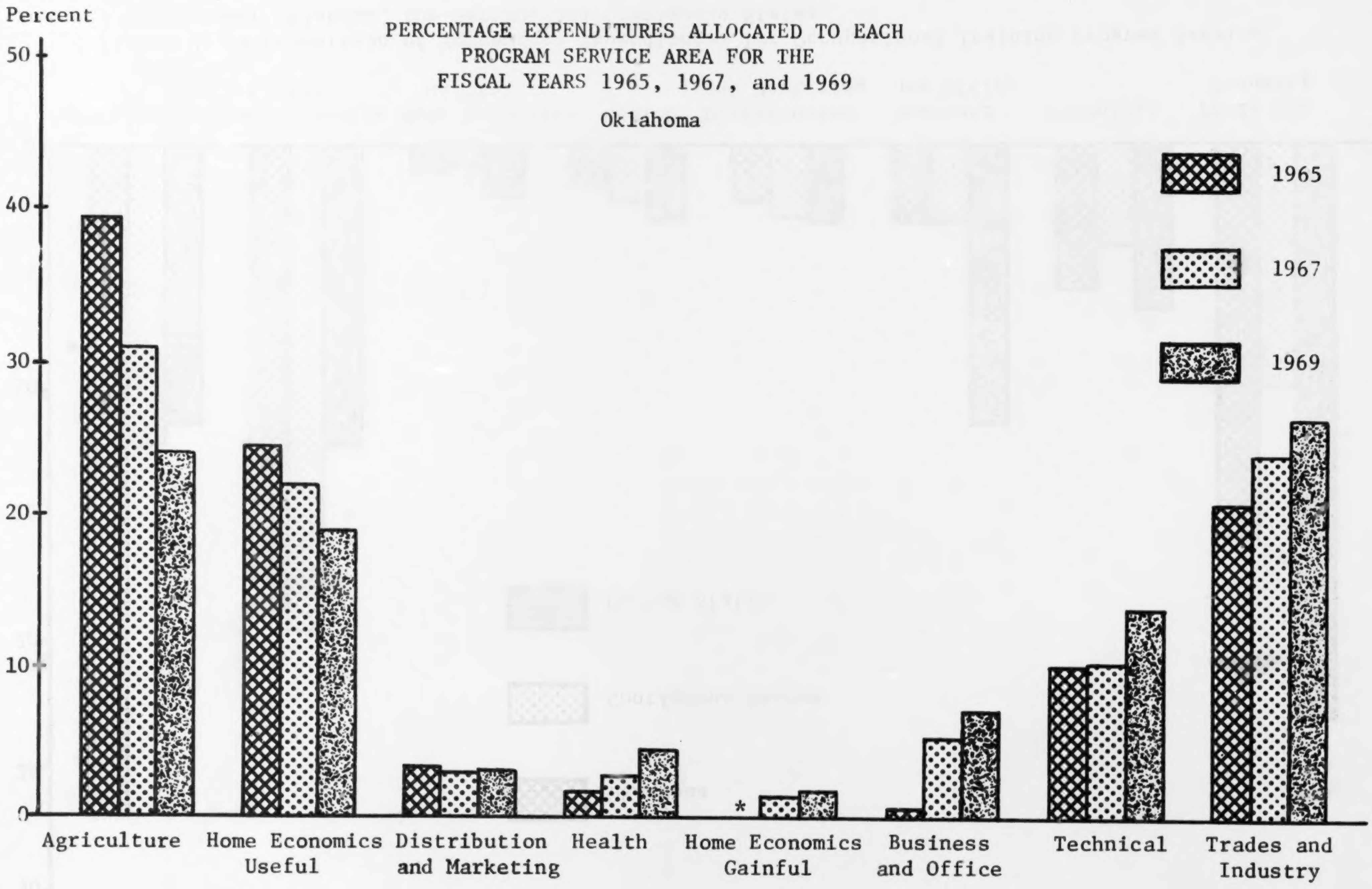
[4] Vocational and Technical Education - Annual Report, U. S. Office of Education, 1968.

Figure 2.



PERCENTAGE EXPENDITURES ALLOCATED TO EACH
PROGRAM SERVICE AREA FOR THE
FISCAL YEARS 1965, 1967, and 1969

Oklahoma

* No expenditures were allocated to Home Economics Gainful in 1965.
Source: Oklahoma State Department of Vocational and Technical Education.

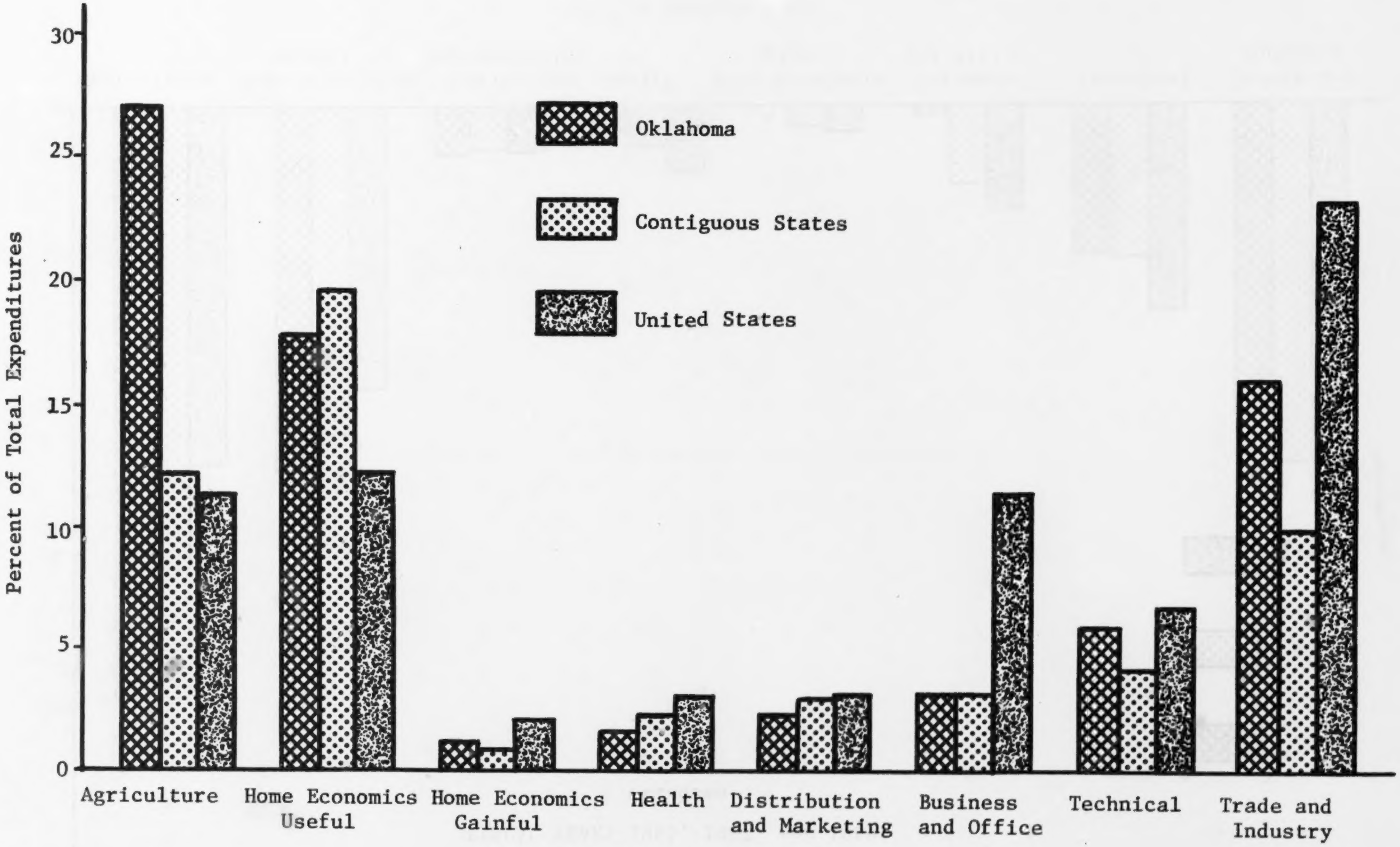


Figure 3. A Comparison of Percentage Expenditures for Occupational Training Program Service Areas Between Oklahoma, the Nation, and Contiguous States.

Source: Vocational & Technical Education - Annual Report, U.S. Office of Education, 1968.

Some of these changes are a shift from employment in agriculture to industry and from the so-called tertiary sector to service industries and government; an increase in the labor force participation of women; and a shift from manual and unskilled work to white collar, professional, and technical jobs (See Chapter III, Part I for detailed information on jobs - Oklahoma.)

Labor market conditions are extremely important in Oklahoma's strategy for economic development. The fundamental objective of this strategy is to create more and better jobs and income for the people of Oklahoma by increasing the rate of growth of Oklahoma's economy. This program can be implemented by encouraging big financial investments directed towards large and new income generating activities. Information is necessary on demand, supply, and other market factors in order to implement any such strategy.

The economic development program must help create establishments which will employ more people. A larger number of organizations also implies greater competitiveness, sensitivity to marketing opportunities and changes, and a diversification of talents and risks. The development and monitoring of a skilled labor force is absolutely essential to accomplish these goals.[5]

The success or failure of this strategy will depend, to a great extent, on the State Department of Vocational and Technical Education. Although there are several other major sources of Oklahoma's skilled manpower supply, such as private schools (Figure 4), the federally reimbursed vocational and technical programs are the ones most directly subject to public policy. Therefore, the degree to which the Objective of Instruction,

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[5] Oklahoma Industrial Development and Park Department: "The Strategy for Economic Development in Oklahoma." A similar approach for improving the economic posture of a state through vocational education program planning can be seen in Vocational Technical Education in Pennsylvania, Pennsylvania Department of Education, 1969, pp. 107-158.

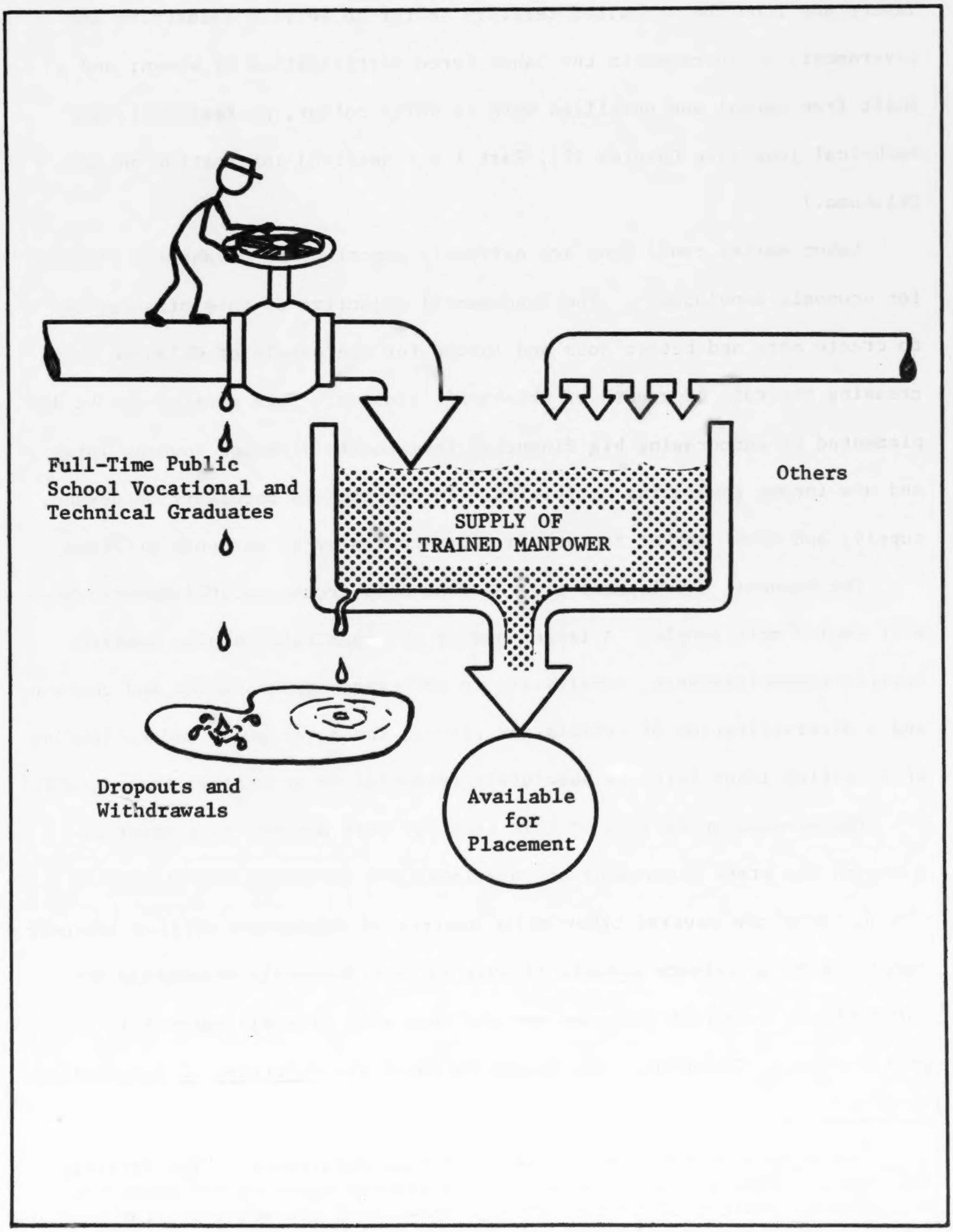

Full-Time Public
School Vocational and
Technical Graduates
Others
SUPPLY OF
TRAINED MANPOWER
Dropouts and
Withdrawals
Available
for
Placement

Figure 4. Pipeline to the Supply of Trained Manpower.

as outlined in the Oklahoma State Plan for the Administration of Vocational Education, is met will have a major effect on Oklahoma's progress.

Any serious effort to collect, analyze, and utilize manpower data for vocational and technical educational planning must first address itself to the basic objectives of vocational and technical education itself. The objectives of the Oklahoma State Plan for Vocational and Technical Education are like those of most other states: to assist individuals in selecting a vocation and to prepare individuals for skilled jobs or to prepare them to participate in advanced skill training. OTIS was designed to generate and organize new information that would be useful to decision makers in evaluating the success of the vocational and technical education system in achieving the above objectives.

OTIS can easily serve as a model for the introduction of similar efforts in other states since many of the states have similar organizational structure and the planning concepts remain the same. The pervasive need for such systems is due to the lack of relevant information needed to assist educational planners in distributing limited funds among competing demands. The pursuit of established educational and social goals can be accomplished most effectively if accurate information is made available to potential users at appropriate intervals and in usable format.

One of the first issues explored in the design of OTIS was to identify the potential users of the system. Subsequent decisions on information content, format, and frequency of distribution could not be made until the user population was specified. Some users had a need for immediate market information, some were interested in a short-term forecast of market conditions, while some others were involved in long-range planning and therefore required a different type of information to improve the quality of their decisions.

In addition to needing data on the supply of trainees in the skill-training pipeline and the demand for these persons, educational decision makers should be aware of the important function of their programs in achieving and sustaining strong economic growth, and affecting equal employment opportunity regardless of race or socio-economic status. Recognition of the role of vocational education in achieving these broader social objectives led directly to the need to establish program priorities. An awareness of the importance of information system for educational resource allocation is essential for the achievement of these broad objectives.

The aspects of OTIS explored above define a clear sequential process of designing and operating such a system:

1. The potential user population must be clearly specified.
2. The types of information required by these different user groups must be clarified.
3. Mechanisms for securing the needed information must be developed.
4. A methodology for analyses which will aid user groups for planning purposes must be developed.
5. Appropriate formats for dissemination must be determined: also, decisions must be reached on the frequency and pattern of distribution of informational output.
6. Administrators of such a system must develop formal procedures for periodic feedback and refinement of the system so that it can more effeciently meet the future needs of its users.
7. Key decision-makers must be identified and intimately involved in the design of the system in order to increase the probability of their using the data outputs to improve the quality of their decisions.

It is also important to explore the factors that promote, and those that retard, the effective use of the information secured in accomplishing desired program changes. The OTIS system should be evaluated largely on its success in fostering an efficient allocation of limited educational resources.

The accomplishment of the above stated purposes required that careful attention be given to numerous component elements. Data collection instruments had to be designed and procedures for repetitive cycling established. Appropriate coding formats were developed to facilitate analysis and information retrieval. Evaluation of program effectiveness required data on participant (enrollee) identification, completion and dropout rates, subsequent employment and advanced training experiences, appropriate outmigration and withdrawal rates, and program and institutional cost. Meaningful evaluation requires a comparison of program costs and returns; neither can be used separately to justify a change in the emphasis of a given program.

The issue of resource allocation to geographic areas and vocational-technical program categories is central to the design of OTIS. Before the decision as to which program to support is made, inter-program comparisons must be made of relative costs, and returns. This comparison will help determine how a given amount of money can be most effectively allocated among programs to achieve an established set of objectives. Of course, this type of inter-program comparison requries prior assumption about their effectiveness. The broadest level of evaluation should ask how the returns on investment in vocational education compares with alternative uses of tax dollars.

Given the decision to invest in a specified training curriculum, how the program should be structured is the second important issue in this context. Questions such as appropriate class size, length of program, and eligibility criteria for student participation should be explored. The problem of the participation rates of various socio-economic groups, particularly the disadvantaged, in Oklahoma's training programs is one of the most urgent in view of manpower needs of the state.

In other words, there are three levels of decision making accomplished in sequential order. How much money should be invested in vocational education? Given this amount, how should it be allocated among geographic areas and program categories? Given these two decisions, how can the respective programs be administered most effectively? This issue will be further discuss in Chapter III.

The remainder of this report is devoted to chapters dealing with the overall procedures of the system and analysis of Oklahoma's vocational and technical program mix. In Chapter III there is an analysis of specific manpower supply and demand information for eleven labor market regions within Oklahoma as well as for Oklahoma as a whole. Subsequent analyses concentrate on identifying areas where trained manpower is needed to implement Oklahoma's strategy for economic development. All analyses and recommendations are handled in such a way as to leave the final interpretation of the data to local authorities.

The co-sponsoring and cooperating agencies involved with the Occupational Training Information System were fully aware of the numerous and complex nature of the questions which needed to be researched if a reasonable balance was to be achieved in manpower supply and demand in the near future. Therefore, one of the primary research strategies was to establish important areas of need and to cycle the research on a yearly basis in order to improve decision making at all levels of the system.

It was the express desire of the OTIS project staff and funding agencies that the project be continued in an operational context in one or more of the relevant Oklahoma agencies. In this way, inter-agency commitments and cooperative efforts could be achieved on a continuing basis. At the January, 1970 OTIS Advisory Committee Meeting, there was unanimous agreement that the Oklahoma State Department of Vocational and Technical Education should serve as the central agency for this purpose. The probability of continued success with an evolving information system seems very high at this time. Chapter IV is devoted to a discussion of OTIS's present impact and future direction.

CHAPTER II

OVERALL PROCEDURES FOR THE SYSTEM

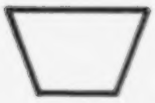
This chapter is devoted to the overall procedures for attaining the major purpose of OTIS which was to develop and initiate a continuous and detailed occupational training information system as a better data base for encouraging necessary changes (if any) in Oklahoma's State Plan for Vocational Education and in consequent patterns of occupational offerings and enrollments. Detailed documentation for operationalizing or replicating OTIS can be found in Appendices A through I. In Appendices A through I, as also in this chapter, the narrative will be grouped into the OTIS components of manpower supply and follow-up, demand, cost, underdeveloped human resources socio-political involvements, and the interfacing of supply and demand. Selected aspects of the follow-up component are discussed along with supply because the supply of manpower is dramatically affected by the number of graduates who actually are available for placement. Additional analysis of follow-up data is reviewed in Chapter III, Part II.

The OTIS components are interdependent, as shown in Figure 5. This schematic presents an overview of the OTIS project indicating the direction which the flow of information must assume in order for decision makers to utilize OTIS data in planning for vocational and technical education. The system as indicated in Figure 5, is designed to be re-cycled yearly in order to provide, in January of each year, data which is needed for statewide planning purposes. The first cycle report was released in January of 1969

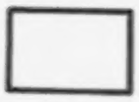
FIGURE 5

Inputs, Processes, and Outputs of the Occupational Training Information System to be Used as a Decision-Making Tool in Relation to the Vocational and Technical Program Mix in Oklahoma.

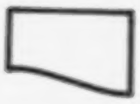
LEGEND



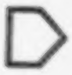
INPUT -- ANY ACTION THAT RESULTS IN 'NEW' DATA FOR THE SYSTEM.



PROCESS -- ANY ACTION THAT PROCESSES, ANALYZES, MOVES, OR INTERPRETS EXISTING DATA.

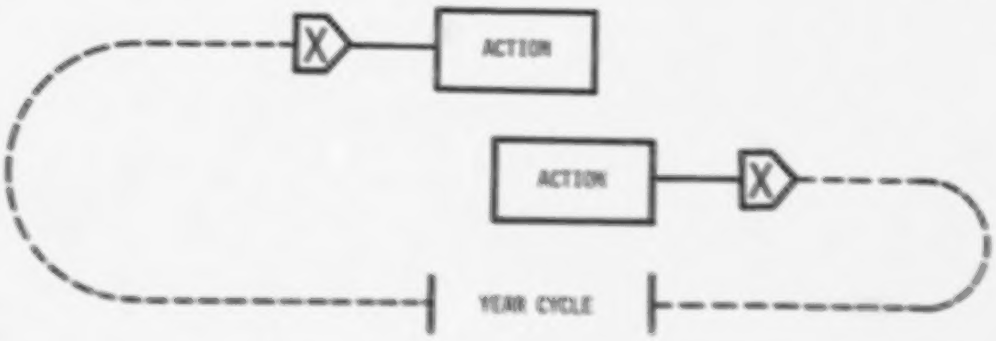


OUTPUT -- ANY REPORT PRODUCED BY THE SYSTEM.



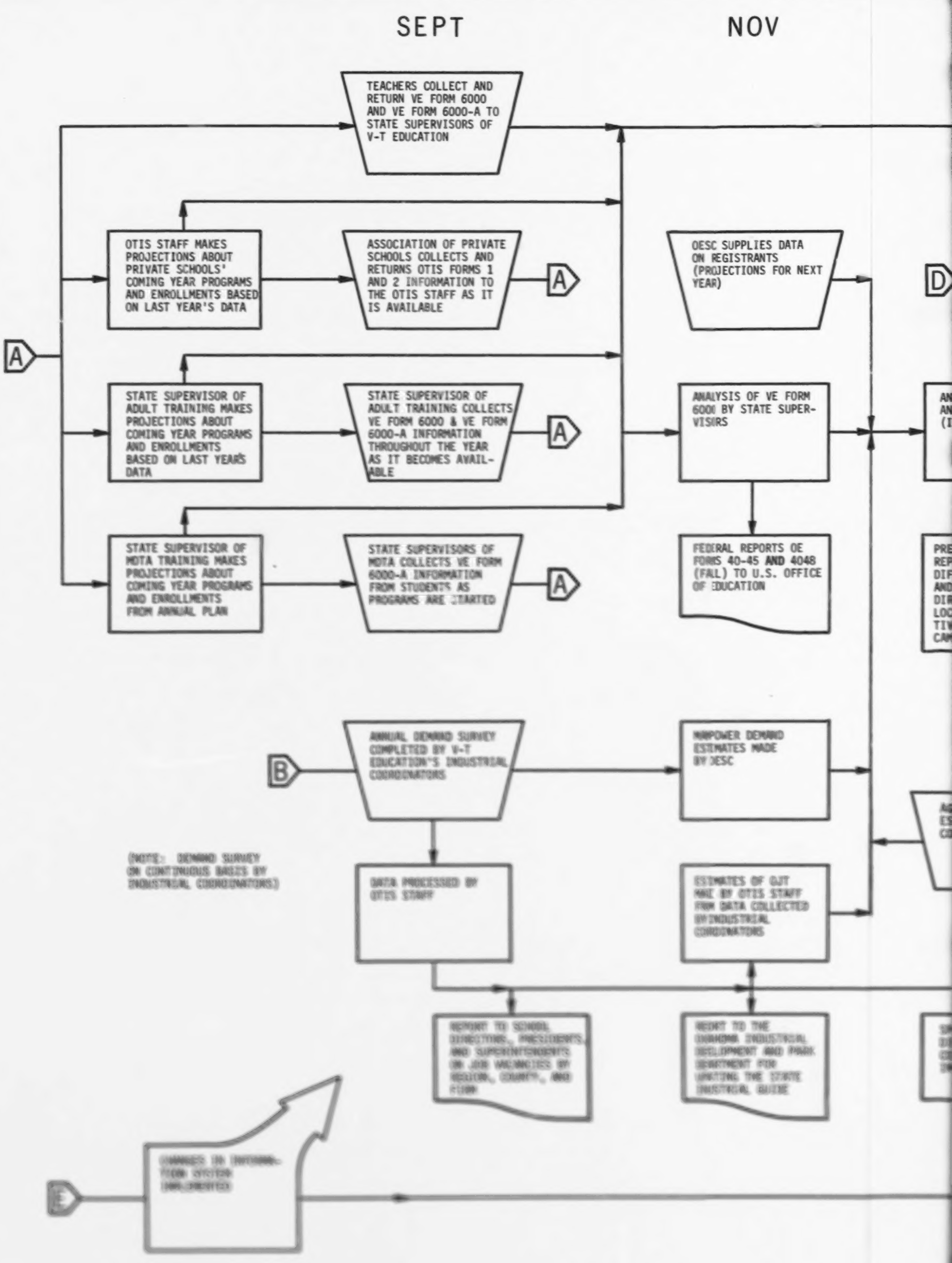
OFF PAGE CONNECTOR -- A SYMBOL FOR INDICATING THAT THIS LINE IS ENTERING FROM A DIFFERENT TIME FRAME, I.E. DIFFERENT YEAR.

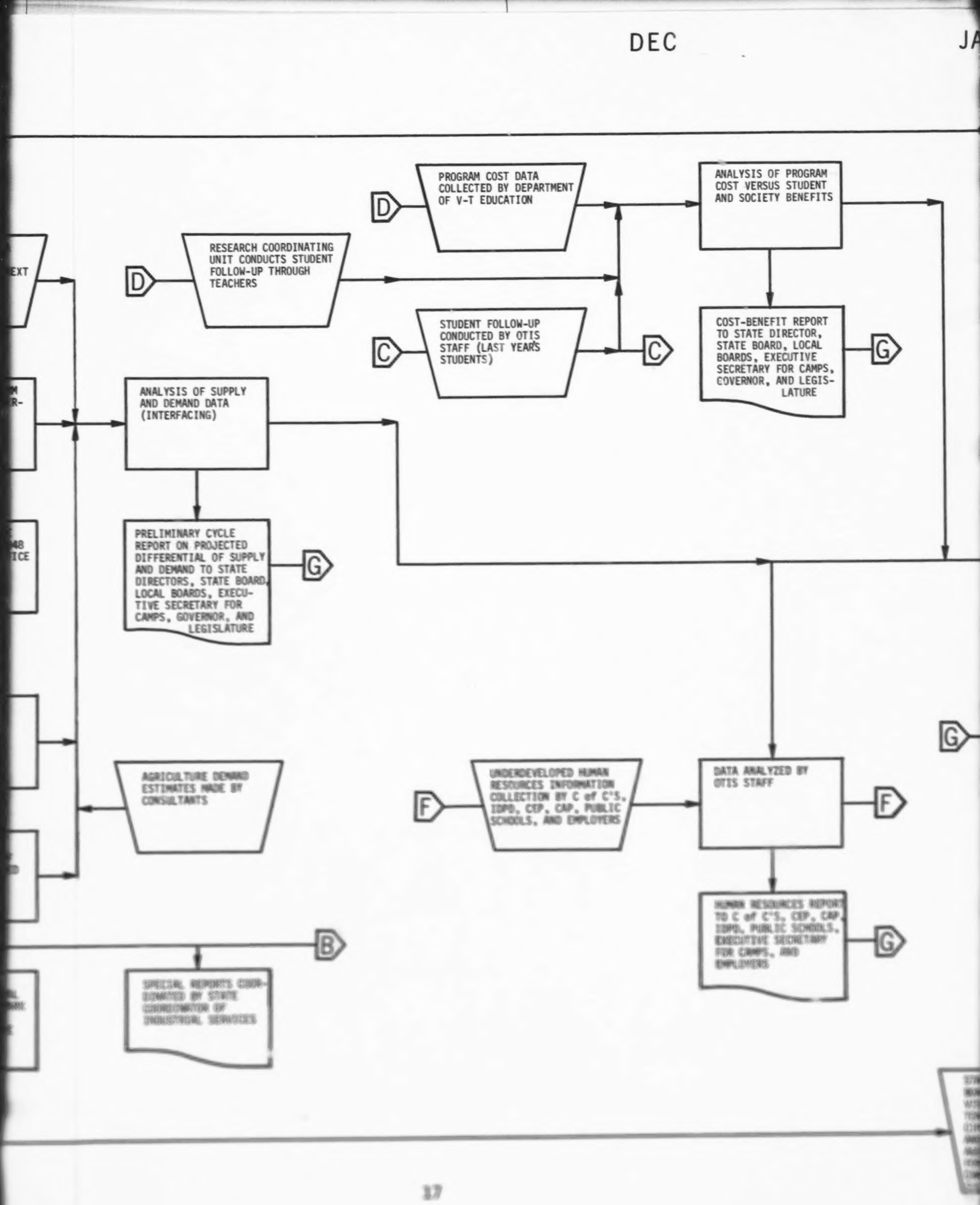
EXAMPLE:

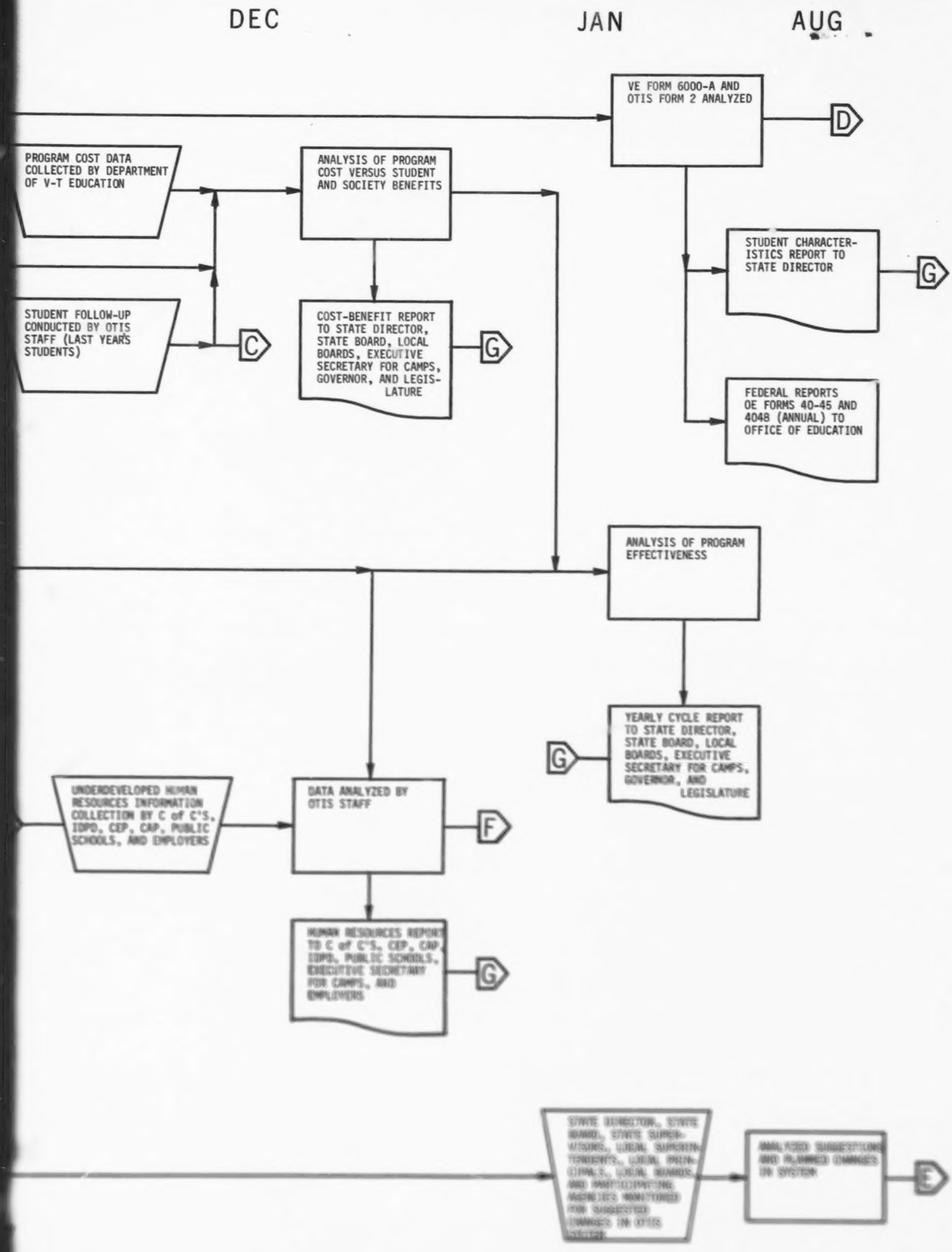


PRIMARY RELATIONSHIPS

A	SUPPLY
B	DEMAND
C	COST
D	FOLLOW-UP (BENEFIT)
E	SOCIO-POLITICAL
F	UNDERDEVELOPED
G	YEARLY CYCLE REPORT


SEPT
NOV
TEACHERS COLLECT AND RETURN VE FORM 6000 AND VE FORM 6000-A TO STATE SUPERVISORS OF V-T EDUCATION
A
OTIS STAFF MAKES PROJECTIONS ABOUT PRIVATE SCHOOLS' COMING YEAR PROGRAMS AND ENROLLMENTS BASED ON LAST YEAR'S DATA
ASSOCIATION OF PRIVATE SCHOOLS COLLECTS AND RETURNS OTIS FORMS 1 AND 2 INFORMATION TO THE OTIS STAFF AS IT IS AVAILABLE
A
OESC SUPPLIES DATA ON REGISTRANTS (PROJECTIONS FOR NEXT YEAR)
D
STATE SUPERVISOR OF ADULT TRAINING MAKES PROJECTIONS ABOUT COMING YEAR PROGRAMS AND ENROLLMENTS BASED ON LAST YEAR'S DATA
STATE SUPERVISOR OF ADULT TRAINING COLLECTS VE FORM 6000 & VE FORM 6000-A INFORMATION THROUGHOUT THE YEAR AS IT BECOMES AVAILABLE
A
ANALYSIS OF VE FORM 6000 BY STATE SUPERVISORS
FEDERAL REPORTS OE FORMS 40-45 AND 4048 (FALL) TO U.S. OFFICE OF EDUCATION
STATE SUPERVISOR OF MDTA TRAINING MAKES PROJECTIONS ABOUT COMING YEAR PROGRAMS AND ENROLLMENTS FROM ANNUAL PLAN
STATE SUPERVISORS OF MDTA COLLECTS VE FORM 6000-A INFORMATION FROM STUDENTS AS PROGRAMS ARE STARTED
A
B
ANNUAL DEMAND SURVEY COMPLETED BY V-T EDUCATION'S INDUSTRIAL COORDINATORS
MANPOWER DEMAND ESTIMATES MADE BY OESC
(NOTE: DEMAND SURVEY ON CONTINUOUS BASIS BY INDUSTRIAL COORDINATORS)
DATA PROCESSED BY OTIS STAFF
ESTIMATES OF OJT MADE BY OTIS STAFF FROM DATA COLLECTED BY INDUSTRIAL COORDINATORS
REPORT TO SCHOOL DIRECTORS, PRESIDENTS, AND SUPERINTENDENTS ON JOB VACANCIES BY REGION, COUNTY, AND FIRM
REPORT TO THE OKLAHOMA INDUSTRIAL DEVELOPMENT AND PARK DEPARTMENT FOR UPDATING THE STATE INDUSTRIAL GUIDE
E
CHANGES IN INFORMATION SYSTEM IMPLEMENTED


DEC
JA
EXT
RESEARCH COORDINATING UNIT CONDUCTS STUDENT FOLLOW-UP THROUGH TEACHERS
D
PROGRAM COST DATA COLLECTED BY DEPARTMENT OF V-T EDUCATION
D
STUDENT FOLLOW-UP CONDUCTED BY OTIS STAFF (LAST YEAR'S STUDENTS)
C
C
ANALYSIS OF PROGRAM COST VERSUS STUDENT AND SOCIETY BENEFITS
COST-BENEFIT REPORT TO STATE DIRECTOR, STATE BOARD, LOCAL BOARDS, EXECUTIVE SECRETARY FOR CAMPS, COVERNOR, AND LEGISLATURE
G
ANALYSIS OF SUPPLY AND DEMAND DATA (INTERFACING)
PRELIMINARY CYCLE REPORT ON PROJECTED DIFFERENTIAL OF SUPPLY AND DEMAND TO STATE DIRECTORS, STATE BOARD, LOCAL BOARDS, EXECUTIVE SECRETARY FOR CAMPS, GOVERNOR, AND LEGISLATURE
G
G
AGRICULTURE DEMAND ESTIMATES MADE BY CONSULTANTS
F
UNDERDEVELOPED HUMAN RESOURCES INFORMATION COLLECTION BY C of C'S, IDPD, CEP, CAP, PUBLIC SCHOOLS, AND EMPLOYERS
DATA ANALYZED BY OTIS STAFF
F
HUMAN RESOURCES REPORT TO C of C'S, CEP, CAP, IDPD, PUBLIC SCHOOLS, EXECUTIVE SECRETARY FOR CAMPS, AND EMPLOYERS
G
B
SPECIAL REPORTS COORDINATED BY STATE COORDINATOR OF INDUSTRIAL SERVICES


DEC
JAN
AUG
VE FORM 6000-A AND OTIS FORM 2 ANALYZED
D
PROGRAM COST DATA COLLECTED BY DEPARTMENT OF V-T EDUCATION
ANALYSIS OF PROGRAM COST VERSUS STUDENT AND SOCIETY BENEFITS
STUDENT CHARACTERISTICS REPORT TO STATE DIRECTOR
G
STUDENT FOLLOW-UP CONDUCTED BY OTIS STAFF (LAST YEARS STUDENTS)
C
COST-BENEFIT REPORT TO STATE DIRECTOR, STATE BOARD, LOCAL BOARDS, EXECUTIVE SECRETARY FOR CAMPS, GOVERNOR, AND LEGISLATURE
G
FEDERAL REPORTS OE FORMS 40-45 AND 4048 (ANNUAL) TO OFFICE OF EDUCATION
ANALYSIS OF PROGRAM EFFECTIVENESS
YEARLY CYCLE REPORT TO STATE DIRECTOR, STATE BOARD, LOCAL BOARDS, EXECUTIVE SECRETARY FOR CAMPS, GOVERNOR, AND LEGISLATURE
G
UNDERDEVELOPED HUMAN RESOURCES INFORMATION COLLECTION BY C of C'S, IDPD, CEP, CAP, PUBLIC SCHOOLS, AND EMPLOYERS
DATA ANALYZED BY OTIS STAFF
F
HUMAN RESOURCES REPORT TO C of C'S, CEP, CAP, IDPD, PUBLIC SCHOOLS, EXECUTIVE SECRETARY FOR CAMPS, AND EMPLOYERS
G
STATE DIRECTOR, STATE BOARD, STATE SUPERVISORS, LOCAL SUPERINTENDENTS, LOCAL PRINCIPALS, LOCAL BOARDS, AND PARTICIPATING AGENCIES MONITORED FOR SUGGESTED CHANGES IN OTIS SYSTEM
ANALYZED SUGGESTIONS AND PLANNED CHANGES IN SYSTEM
E

based on data collected from August, 1968 (when the project started) to January of 1969. The second cycle extended from February 1969 to January 1970. Thie third cycle report will be released in January, 1971 under the direction of the State Department of Vocational and Technical Education where the system is in full operation.

Although Figure 5 discribes only the flow of data in the information system, the ultimate aim of OTIS is to affect appropriate changes in the occupational training program mix. Figure 6 shows how information on the program mix is reported to decision makers who are responsible for program changes. When program changes are made, they are reflected in the data and perhaps in the subsystem for collecting the data.

Before discussing the overall procedures related to the various components, it is necessary to point out that these aforementioned components serve as the basic framework to construct a decision making model. This model with continual refinements will make it possible to estimate the consequences of alternative choices; that is, the costs of each alternative and the extent to which each alternative will attain the desired objectives.

Procedure For Manpower Supply

Essentially, this section of the chapter describes the manpower supply subsystem and how manpower supply estimates are gathered and subsequently modified to reflect only those graduates who are expected to be "available for employment". In addition, there is a review of how follow-up information was gathered and utilized in both cycles I and II.

Systems concept and its development for statewide manpower planning and particularly vocational and technical training is still in its infancy. OTIS is keyed to the supply component since it is a training (supply) information system. In addition, it was considered important to concentrate on how the supply component can respond to the manpower demand since this was one of the major objectives of the system.

The factors relating to supply are identified as functions, activities and variables. A function relates to the total system and affects all activities which exist for a unique or specific purpose. The functions were designated as management and guidance, and the activities by the subsystem as recruitment, selection, training, and placement. Each of the functions and activities have variables which describe the state of the system at any one time. Figure 6 depicts the factors of the supply component.

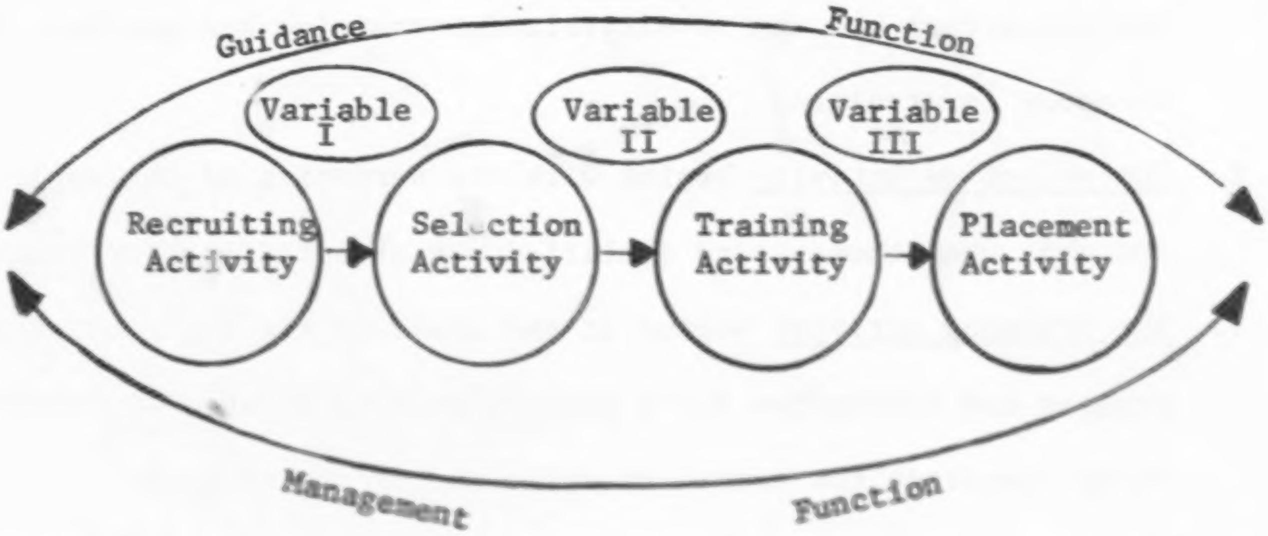

Guidance
Function
Variable I
Variable II
Variable III
Recruiting Activity
Selection Activity
Training Activity
Placement Activity
Management
Function

Figure 6. Factors Which Affect the Supply Subsytem.

Activities of the Subsystem

The emphasis on product evaluation does not mean that student interests and aptitudes must be neglected. On the contrary, the systematic approach of examining activities such as recruitment, selection, training, and placement (which comprise the activities in the subsystem) in light of outcomes will allow us to provide more meaningful services to students.

The above activities of the subsystem are defined as follows:

1. *The recruiting activity* begins with the indentification of the target population and terminates when the desired number of applicants has been obtained. During this period, it is necessary to inform the target population of the benefits of training and to generally acquaint them with the training program. It is also necessary to identify specific members of the population (underdeveloped human resources) who may be eligible for training and motivate them to apply for training.
2. *The selection activity* begins with the screening of the applicants and ends when those found qualified are accepted for enrollment.
3. *The training activity* begins at the start of the instructional program and terminates for a particular student when he successfully completes the course or drops out of the program.
4. *The placement activity* begins when the individual graduate begins seeking gainful employment in a job related to his training and terminates when he finds the job.

Functions of the Subsystem

The subsystem has the two basic functions. These are guidance and management. The vocational guidance function relates to the total subsystem and is aimed at assisting the potential students to formulate their educational and vocational goals, to plan the achievement of these goals, and to manage their performance toward these goals. This is continuous function being performed during every activity in the system.

The managment function relates to the total subsystem with its basic objective being survival of the organization. The management function will not be discussed because it will be assumed that the reader is familiar with the role of management in an organization. The management function is concerned with the organization as a whole whereas the guidance function is concerned with the persons in the subsystem.

Variables of the Subsystem

The total statewide manpower supply is the total number of measured or projected skilled persons available during the time period under consideration, categorized according to specific skill, or "skill cluster" and the state supply source where this skilled person is located.

The determination of supply is not a simple task. However, the complexity of this task should not dissuade those responsible for decision-making in the vocational and technical education system from making every possible effort to acquire as much factual and reliable data as is economically feasible.

Variables related to the vocational-technical supply subsystem are:

1. The adjustment required to meet the labor market needs of the state is determined by any differential which might exist betwen manpower demand and supply. Simply stated, this is the net manpower which must be supplied. That is:

$$\text{Total Statewide Manpower Adjustment} = \text{Statewide Manpower Demand} - \text{Statewide Manpower Supply}$$

2. An allocation of adjustment share must be made for each supply source in the state which offers training in the skill under

consideration. This is necessary to assure that the proper number of persons are trained in the skills or occupations needed to bring the demand minus supply differential into the desired balance. A decision of this type can only be effectively rendered by a committee composed of representatives from the major sources of manpower supply which exist within the state or region.

The strategy utilized in cycle II was to allocate the percentage of adjustment to each individual supply source based on the share of total statewide supply they provided the previous year. There are alternative methods to allocate adjustment share depending upon the level of cooperation between agencies and the type, level, and acceptance of data.

After acceptance of the adjustment share allocated to the vocational and technical system, the task of adjusting the enrollment mix becomes a prime requirement. To accomplish this, it is necessary to identify the major variables of the subsystem and these are shown in Figure 7.

3. Not all graduates who are trained are available for placement in related jobs within the boundaries of the state. Many outmigrate to other states, enter the Armed Forces, continue in school to further their education, and some completely withdraw from the labor force and do not accept employment. This group of graduates is considered a short run loss and are termed defectors. Therefore, the number of projected graduates must exceed the adjustment share by an amount equal to the number of defectors forecast to exist. That is: required graduates = adjustment share + defectors.
4. All enrollees in a training program do not successfully complete

the program and emerge as graduates. Those enrollees who fail to complete the training program and depart without graduating will be defined as dropouts. Therefore, the number of enrollees required to satisfy the graduate requirement must be compensated for the number of persons projected to dropout of the training program. That is: enrollees required = graduates + dropouts.

The number of enrollees that dropout during the training program directly affect the output quantity and quality of graduates available for gainful employment in the labor force. This is an important variable to continuously monitor because it can assist in evaluation of programs.

Supply Population in Oklahoma

The primary supply population in this project included enrollees of all sub-professional occupational programs in Oklahoma: (a) full-time public programs, (b) adult public programs, (c) MDTA programs, (d) private schools, (e) industrial and government on-the-job training programs, (f) registrants at the Oklahoma Employment Security Commission, or (g) selected non-federally reimbursed vocational and technical programs which although not reimbursed were significant to total manpower supply. Supply from (e) and (f) above were combined for supply reporting purposes in cycle II since the data was not amenable to separation at that time. Tentative plans call for systematically adding to the above list with other sources of supply. The primary method of supply data collection was the questionnaire. There were two main supply questionnaire forms, one of which was designed to gather training program information from the teacher and the other to gather student background information from the student. The teacher questionnaire utilized in the cycle I report (published in January of 1969) was designed to gather data on

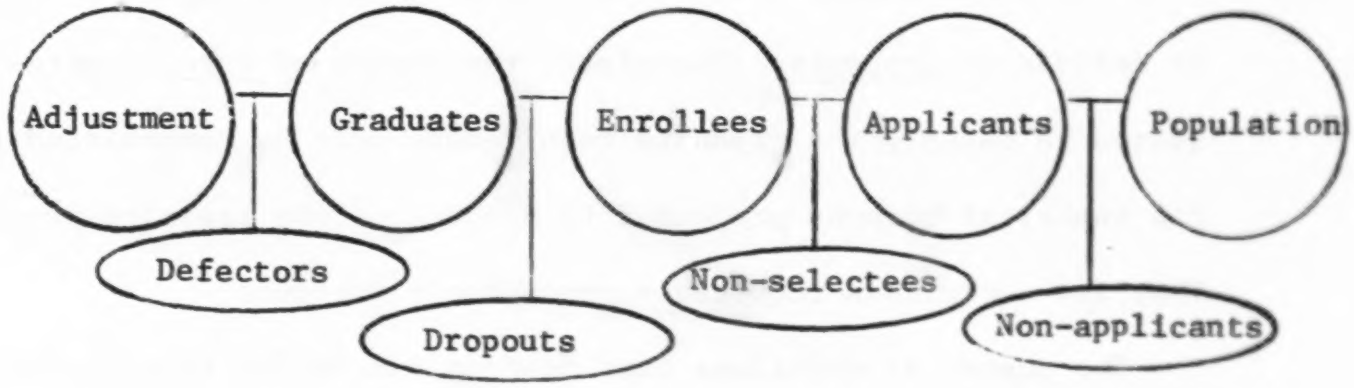


Figure 7. The Major Variables of the Supply Subsystem for any Specific Skill.

dropouts and laboratory space available as well as training program enrollments. This questionnaire (OTIS I) proved inadequate and was redesigned as Vocational Education Form 6000A. Both Forms are shown in Appendix A with complete documentation. Similar modifications were brought about in the questionnaire used to gather data from private schools.

Data were collected for cycle I between October 1, 1968, and December 15, 1968, and for cycle II between September 1, 1969, and October 28, 1969. These dates were selected on order to gather pertinent sutdent data before any major influence on student attitudes occurred which might affect responses to questions such as: "Who most influenced you to enroll in this program?" The questionnaires were administered through the State Department of Vocational and Technical Education and the Association of Oklahoma Private Schools, although a few private schools were contacted directly by the OTIS staff. This program enrollment information was used to project the number of graduates available during any one given calendar year.

An effort was made during cycle II to make an accurate assessment of the trained manpower supplied by the private schools during Cycle II. A series of talks were held with the private educators, individually and in groups.

Though their cooperation was excellent in many cases, the effort was handicapped due to the following factors:

1. There is little uniformity among the schools, and in some cases among the programs within the same school, as to the program lengths and the dates of admission and graduation.
2. There was no regulatory licensing of private schools in Oklahoma, their number varies from year to year as do the number of training programs they offer.[1]
3. In many cases the private schools, since they were not obliged to report their enrollments, did not keep their records in such a way that required information could be obtained.[2]

The private schools, however, play a significant role in supplying trained manpower to the state. Some evidence of this is presented in Chapter III.

Graduates estimated to be available for employment between June of one year and June of the following year were considered manpower supply for the purpose of reporting.

Graduates Available for Employment

A forecasting technique had to be employed in cycles I and II in order to determine the probable number of public and private school graduates who would actually be available for jobs in Oklahoma in order to match manpower demand and supply. The following discussion presents a data-based rationale for estimating the percentage of graduates available for employment in Oklahoma. These percentages were applied to the total number of graduates in order to arrive at the figures used in interfacing tables. These tables are shown for statewide totals in Appendix I-1. Similar tables have been generated for the eleven regions in Oklahoma.

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[1] A regulating law has since been passed (See Appendix J.) This will help in data collection from private schools.

[2] Those who seek G.I Bill Accreditation must report their total monthly attendance to the State Accrediting Agency in Oklahoma City.

Table I shows the subsequent job related behavior patterns of occupational training program graduates from the public sector. (Source: U. S. Office of Education 1968 annual report entitled Vocational and Technical Education.) This publication represented the latest national data available (published May 1968) on graduates, enrollments, and expenditures in federally reimbursed vocational and technical education. This data was interpreted by the OTIS staff on the basis of what happens to 100 graduates from each of the vocational and technical service areas. This interpretation shows that of the 100 graduates in each service area, 44 would be available for placement in vocational agriculture; 56 in distributive education; 84 in health education; 40 in home economics (gainful); 62 in office education; 55 in technical education; and 59 in trade and industrial training. The overall number of graduates available for placement out of the 100 would be 57.

Comparable figures for Oklahoma's reimbursed occupational programs can be seen in Table II. The data came from a three-year follow-up study for the years 1963-66 conducted by the Oklahoma Research Coordinating Unit at Oklahoma State University. The national figures and the Oklahoma data for 1965-66 were somewhat different; therefore, an average was computed for the two sets of figures for utilization in the Cycle I report published in January of 1969. This average is shown in Table III. The final manpower availability figures utilized in Cycle I were: 51 in vocational agriculture; 51 in distributive education; 90 in health education; 40 in home economics (gainful); 50 in office education; 51 in technical education; and 52 in trade and industrial training.

TABLE I

SUBSEQUENT BEHAVIOR PATTERNS OF OCCUPATIONAL TRAINING PROGRAM GRADUATES
(BASED ON NATIONAL AVERAGES FOR 100 GRADUATES IN EACH
PROGRAM SERVICE AREA)

	All Programs	Agriculture	Distributive	Health
Completed Program Requirements	100	100	100	100
Available for Placement	57	44	56	84
Placed, Related to Training	46	30	44	77
Placed, Unrelated to Training	7	11	7	3
Placed, Part-Time	2	2	3	3
Unemployed	2	1	2	1
Not Available for Placement	36	53	38	9
Entered Armed Forces	8	13	10	1
Continued School Full-Time	23	38	23	5
Other Reasons	5	2	5	3
Date Not Available	7	3	6	7

	Home Economics (Gainful)	Office	Technical	Trades and Industry
Completed Program Requirements	100	100	100	100
Available for Placement	40	62	55	59
Placed, Related to Training	30	50	50	47
Placed, Unrelated to Training	4	6	3	8
Placed, Part-Time	3	3	1	2
Unemployed	2	3	1	2
Not Available for Placement	55	31	37	33
Entered Armed Forces	1	3	9	12
Continued School Full-Time	12	22	26	18
Other Reasons	42	6	2	3
Data Not Available	5	7	8	8

Source: Vocational and Technical Education - Annual Report, Department of Health, Education and Welfare, 1968.

TABLE II

SUBSEQUENT BEHAVIOR PATTERNS OF OCCUPATIONAL TRAINING PROGRAM GRADUATES (BASED ON OKLAHOMA AVERAGES FOR 100 GRADUATES IN EACH PROGRAM SERVICE AREA)

	All Programs	Agriculture	Distributive	Health
Completed Program Requirements	100	100	100	100
Available for Placement	52	58	45	96
Placed, Related to Training	25	33	29	80
Placed, Unrelated to Training	14	14	10	4
Placed, Part-Time	-	-	-	-
Unemployed	6	6	3	7
Not Available for Placement	48	37	46	3
Entered Armed Forces	11	12	12	1
Continued School Full-Time	31	20	23	2
Other Reasons	3	4	11	-
Data Not Available	7	5	9	1

	Home Economist (Gainful)	Office	Technical	Trades and Industry
Completed Program Requirements	100	100	100	100
Available for Placement	39	38	47	45
Placed, Related to Training	9	26	39	22
Placed, Unrelated to Training	13	8	5	13
Placed, Part-Time	-	-	-	-
Unemployed	7	4	3	4
Not Available for Placement	54	54	53	55
Entered Armed Forces	2	2	15	20
Continued School Full-Time	44	52	38	29
Other Reasons	8	-	-	1
Data Not Available	7	8	-	5

Source: "Three Year Follow-Up", Based on unpublished data gathered by the Oklahoma Research Coordinating Unit, 1967.

TABLE III

THE NUMBER OF GRADUATES AVAILABLE FOR PLACEMENT IN OKLAHOMA FROM SEVEN PROGRAM SERVICE AREAS
(BASED ON THE MEAN OF NATIONAL AND OKLAHOMA AVERAGES FOR 100 GRADUATES IN EACH PROGRAM SERVICE AREA)

SERVICE AREA	GRADUATES	AVERAGE NUMBER AVAILABLE FOR PLACEMENT	NUMBER TO OUT-MIGRATE	AVAILABLE FOR PLACEMENT IN OKLAHOMA
Agriculture	100	51	17	34
Distributive	100	51	13	38
Health	100	90	10	80
Home Economics (Gainful)	100	40	13	27
Office	100	50	11	39
Technical	100	51	18	33
Trade and Industrial	100	52	12	40
All Programs	100	55	14	41

Sources: "Three Year Follow-Up", Based on unpublished data gathered by the Oklahoma Research Coordinating Unit, 1967; and Vocational & Technical Education - Annual Report, Department of Health, Education and Welfare, 1968.

During Cycle II, two additional reports on graduates available for placement were developed; namely the 1969 Research Coordinating Unit follow-up, data from which is shown in Table IV and the OTIS follow-up, data from which is shown in Table V (See Appendix D for all follow-up instruments). The Research Coordinating Unit follow-up report utilized vocational teachers as the reporting source, while the OTIS follow-up utilized a mail questionnaire to those expected to graduate during the 1968-69 school year. The Research Coordinating Unit obtained a 74 percent return on a population of 17,281 public school graduates and dropouts, while OTIS obtianed a 34 percent return on the same population. In addition, the OTIS follow-up obtained a 40 percent return on a population of 3,313 private school graduates and dropouts. Although there were considerably more private school graduates than 3,313, this figure represented the names and addresses made available to the OTIS staff at that stage of development.

The OTIS Cycle II follow-up was designed to take a "bias" sample of full-time public graduate non-respondents stratified by program service area. The sample of 100 randomly selected non-respondents yielded a 91 percent return and no significant differences were found between the responding and non-responding groups using the chi-square statistic. Table V presents the actual OTIS follow-up study results relating to the number of graduates available for placement. Because there was reasonable agreement between the two studies, and because the Research Coordinating Unit study did not report out-migration, it was decided to use the OTIS data for calculating net supply in Cycle II.

It should be noted that a small percentage of those designated "available for placement" actually took jobs unrelated to their training, as shown in Table V. This was done in order to recognize their potential placement and to remain parallel with reporting styles of the Department of Health,

TABLE IV

SUBSEQUENT BEHAVIOR PATTERNS OF OCCUPATIONAL TRAINING PROGRAM GRADUATES (BASED ON OKLAHOMA AVERAGES FOR 100 GRADUATES IN EACH PROGRAM SERVICE AREA)

	All Programs	Agriculture	Distributive	Health
Completed Program Requirements	100	100	100	100
Available for Placement	29	26	32	77
Placed, Related to Training	20	19	24	70
Placed, Unrelated to Training	7	4	5	3
Placed, Part-Time	1	1	1	3
Unemployed	1	2	2	1
Not Available for Placement	62	70	62	13
Entered Armed Forces	4	8	6	1
Continued School Full-Time	49	61	51	7
Other Reasons	9	1	6	5
Data Not Available	9	4	6	10

	Home Economics (Gainful)	Office	Technical	Trade and Industrial
Completed Program Requirements	100	100	100	100
Available for Placement	28	39	25	43
Placed, Related to Training	14	27	20	31
Placed, Unrelated to Training	10	7	4	10
Placed, Part-Time	2	1	1	1
Unemployed	2	4	-	1
Not Available for Placement	67	55	49	50
Entered Armed Forces	4	1	8	11
Continued School Full-Time	54	43	41	35
Other Reasons	9	11	-	4
Data Not Available	5	6	26	7

Source: "1969 Student Follow-Up", Based on unpublished data gathered by the Oklahoma Research Coordinating Unit.

TABLE V

SUBSEQUENT BEHAVIOR PATTERNS OF OCCUPATIONAL TRAINING PROGRAM GRADUATES
(BASED ON OKLAHOMA AVERAGES FOR 100 GRADUATES IN EACH
PROGRAM SERVICE AREA)

	All Programs	Agriculture	Distributive	Health
Completed Program Requirements	100	100	100	100
Available for Placement	53	31	45	83
Placed, Related to Training	28	13	21	68
Placed, Unrelated to Training	12	9	11	2
Placed, Part-Time	4	4	4	6
Unemployed	9	5	9	7
Not Available for Placement	45	68	50	16
Entered Armed Forces	4	6	3	-
Continued School Full-Time	36	60	39	9
Other Reasons	5	2	8	7
Data Not Available	2	1	5	1

	Home Economics (Gainful)	Office	Technical	Trade and Industrial
Completed Program Requirements	100	100	100	100
Available for Placement	28	55	37	58
Placed, Related to Training	14	30	28	30
Placed, Unrelated to Training	10	10	5	18
Placed, Part-Time	2	4	1	3
Unemployed	2	11	3	7
Not Available for Placement	67	44	62	40
Entered Armed Forces	4	2	11	9
Continued School Full-Time	54	37	50	28
Other Reasons	9	4	1	3
Data Not Available	5	2	1	1

Source: "1969 OTIS Follow-Up", With Home Economics Gainful taken from unpublished data gathered in 1969 by the Oklahoma Research Coordinating Unit, 1967.

Education, and Welfare.

The question of worker mobility must be considered in predicting manpower availability. Out-migration of vocational and technical program graduates from Oklahoma is of particular importance since state planners have identified this level of manpower as a major factor in their industrial development efforts. The Research Coordinating Unit provided out-migration figures in Cycle I, which were replaced in Cycle II with data received through the OTIS student follow-up. The OTIS out-migration rates are lower than those provided by the Research Coordinating Unit in their three-year study follow-up released in 1967. One reason for this is that the OTIS staff calculated the percentage of out-migration based on those graduates in the "available for placement" category who actually took jobs and reported their addresses on the follow-up form. For example, if a graduate were unemployed or left the state to attend an institution of higher education, he was not counted an out-migrant for the purposes of this study. On the other hand, the Research Coordinating Unit had previously calculated out-migration on the basis of all graduates, regardless of their availability for employment which included most military, and some higher education enrollees. However, it is possible that increased attention to the problem of out-migration may have influenced these lowered rates.

Table VI shows the reduction of graduates available for placement by estimated out-migration, which, when subtracted from the manpower available for placement, provided the figures used to compute the "number of graduates available" to Oklahoma in the Cycle II report.

The out-migration figures used for private school graduates were difficult to determine in Cycle I. As stated earlier, the OTIS research

TABLE VI

THE NUMBER OF GRADUATES AVAILABLE FOR PLACEMENT IN OKLAHOMA
(BASED ON 100 GRADUATES IN EACH OF SEVEN
PROGRAM SERVICE AREAS)

SERVICE AREA	GRADUATES	NUMBER AVAILABLE FOR PLACEMENT	NUMBER TO OUT-MIGRATE	AVAILABLE FOR PLACEMENT IN OKLAHOMA	ACTUAL PERCENTAGES USED IN INTERFACING
Agriculture	100	31	3	28	28.3
Distributive	100	45	4	41	40.6
Health	100	83	4	79	79.2
Home Economics (Gainful)	100	28	1	27	27.0
Office	100	55	7	48	47.9
Technical	100	37	10	27	27.2
Trade and Industrial	100	58	8	50	50.3
All Programs	100	53	6	47	46.9

Source: "1969 Follow-Up", of the Occupational Training Information System (OTIS).

staff elected to use an overall figure of 60 percent of the private school graduates who would be available in Oklahoma for cycle I. This decision was based on the national research work of Kenneth Hoyt[3] which indicates that the percentage of graduates available for placement who take jobs in related fields and who take these jobs in a geographic area close to the training site would be higher in private than in public programs.

In cycle II the OTIS follow-up indicated that the out-migration rates for the various private school program areas were generally high, when calculated on the basis of those available for placement.

In cycle II, the OTIS follow-up study data was also utilized for private schools, as shown in Table VII. The "available for placement in Oklahoma" rates were considerably lower in some cases than the previous 60 percent figure used in cycle I. The empirical check, or validation, of the private school "available for placement" figures represented a milestone in total statewide manpower planning. That is, private schools are too often totally neglected as a manpower supply source whereas in the OTIS study they are properly considered a significant source.

Supply data for those training on-the-job and those registered for employment were provided by the Oklahoma Employment Security Commission. One should consult the 1967 regional reports of the Oklahoma Employment Security Commission's (here after referred to as the OESC) Oklahoma Manpower Report,[4] for original source data on this and related matters.

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[3] Hoyt, Kenneth B., "The Specialty Oriented Student Research Program: A Five Year Report", University of Iowa, 1967.

[4] Manpower In Oklahoma, Oklahoma Employment Security Commission, Research and Planning Division, Will Rogers Memorial Bldg., Okla. City, Okla., 1967.

TABLE VII

THE NUMBER OF PRIVATE SCHOOL GRADUATES AVAILABLE FOR PLACEMENT IN OKLAHOMA (BASED ON 100 GRADUATES IN EACH SERVICE AREA)

SERVICE AREA	GRADUATES	NUMBER AVAILABLE FOR PLACEMENT	NUMBER TO OUT-MIGRATE	AVAILABLE FOR PLACEMENT IN OKLAHOMA
Office	100	50	2	48
Commercial Pilot	100	58	44	14
Aviation Mechanic	100	68	52	16
Technical and Trade and Industrial (Excluding Aviation Mechanic)	100	45	5	40

Note: Private School Health Education utilized the same "available for placement" rate as the public schools.

Source: "1969 Follow-Up", of the Occupational Training Information System (OTIS).

Dissemination

Data collected with Form 6000 was disseminated to state vocational and technical education supervisors which they utilized in preparing certain federal reports, i.e., OE Forms 40-45 and 4048 (See Appendix A). Supply data collected on VE Forms 6000 and 6000A was used in determining the differential between demand and supply, as will be explained in the section on the interfacing of supply and demand data.

Procedures for Manpower Demand

Many decision makers in Oklahoma feel that if occupational training programs are to contribute maximally to the economic growth of Oklahoma, micro-manpower demand data must be analyzed on a specific, systematic and continuing basis.

In Cycle I of the OTIS project efforts were made to utilize existing demand data to assist in establishing a model for interfacing manpower supply and demand. At this early stage no attempt was made by the OTIS staff or the Oklahoma Employment Security Commission (hereafter referred to as OESC) to go beyond the 1967 Manpower in Oklahoma[5] report for additional manpower demand data.

The OESC, recognizing the need for information in future occupational requirements information, initiated in May 1967, in cooperation with the State Department of Vocational and Technical Education, a detailed study of almost 300 occupations. The primary objective of the project was to determine current and future manpower needs by industry, major occupational groups and selected occupations. Only the non-farm wage and salary employment sector was surveyed which excludes a great deal of occupational demand in the agriculture sector.

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[5] Ibid.

Although aggregate demand data was available on both occupational and geographical basis, prior to Cycle II of the OTIS project there was no published systematic and continuous operational procedure in Oklahoma for collecting demand data from specific establishments in order to plan and implement local training programs based on the needs of industries within each community. This specific demand information was deemed desirable by the OTIS Advisory Committee in their June 1969 meeting. Therefore, in the summer of 1969 a concentrated survey was conducted in Oklahoma's manufacturing sector. The state was divided into 11 geographic regions corresponding as nearly as possible to vocational-technical area school districts which are in the section in this chapter entitled "interfacing". The data collection regions utilized for surveying establishments are depicted in Appendix B.

The survey was unique not only in the fact that an attempt was made to personally contact all manufacturing establishments in the state, but also in the identity of the individuals who surveyed these industries. The data collectors were primarily vocational and technical education instructors and supervisors who were carefully selected as to their future responsibilities with industrial coordination. These key persons remained in their particular districts after the project was completed. This contributed significantly to the school-industry liaison picture in the various regions of the state. Many have now become industrial coordinators or work closely with someone in that area of responsibility. All area vocational-technical schools now have industrial training coordinators or are completing arrangements in this vital area. The information collected by them is available by business establishment and county. In addition, the information was presented to the Oklahoma Employment Security Commission for use in updating their 1967 data and was available for official school use in curriculum planning on a local and statewide basis.

All data collectors agreed that the personal interview approach was successful in developing rapport between vocational and technical educators and industrial manpower planners. This liaison will serve as a basis for continuous communication between these groups.

The data was collected with a full recognition of the limitations and complications involved in manpower demand estimation. The following explanations were presented to each employer surveyed. (See Appendix B.)

Of the 2964 establishments actually surveyed throughout the summer months, approximately 1 percent would not release demand data information. The majority of these establishments indicated that they were either not interested, too busy, or had already participated in a number of surveys. Approximately ten establishments indicated that they could not release information because of its confidential nature. Table VIII is a breakdown of the results of the demand data collection in the manufacturing sector. The 3316 establishments listed as supplied by the Industrial Development and Park Department manufacturer's guide[6] served as the target population of the demand survey. The Oklahoma Employment Security Commission uses the figure 1812 as the total number of manufacturing firms with four or more employees, which includes 95 percent of the employees in the manufacturing sector. The number of firms with under four employees (791) is an estimated figure calculated from information presented in County Business Pattersn, 1967.[7] As Table VIII shows, 95 percent of the target population was surveyed or

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[6] Oklahoma Industrial Development and Park Department, Oklahoma Directory of Manufacturers and Products, State of Oklahoma, 1967.

[7] U. S. Bureau of the Census, Department of Commerce, County Business Patterns, 1967 (Washington: U. S. Government Printing Office, 1968).

TABLE VIII

RESULTS OF 1969 SUMMER DEMAND DATA COLLECTION IN THE MANUFACTURING SECTOR

Total number of establishments listed - Manufacturer's Guide	3,816
Number of establishments since gone out of buiness	562
Number of establishments with plans to start manufacture	97
Total number of establishments surveyed	3,061
Establishments with manufacturing as primary activity	2,318
Establishments with manufacturing as secondary activity	646

otherwise categorized. Of the 3,061 establishments contacted, 64 percent can be considered manufacturing according to the Standard Industrial Classification Manual, 1967[8], 18 percent were nonmanufacturing; 15 percent were contacted but found to be out of business; and 3 percent were duplicates, firms not yet established, and nonparticipating firms. It is not possible to determine the percent of the firms considered manufacturing by the Oklahoma Employment Security Commission that were surveyed through OTIS data collection because disclosure regulations and laws prohibit publication of the firms which are included in the OESC data. The OESC cooperated with the OTIS staff in making projections from data collected in the manufacturing sector as well as in updating their projections in the other Standard Industrial Classification sectors.[9] The 1967 Oklahoma Employment Security Commission study had projected employment to 1969 and to 1972 and utilized the summer survey as well as other methods to keep this data current. The summer demand data collection provided reports for dissemination on job vacancies by region, county, and business establishment, to school directors, presidents, and superindentents. Conferences were held with all area vocational-technical school officials in order to disseminate and brief them on the reports. In addition, conferences were held with selected school officials, e.g., the president of a new junior college in a major city. Demand data was also utilized to aid the Oklahoma Industrial Development and Park Department in updating their Manufacturer's Directory. The State Department of Vocational and Technical Education has made demand information by county and business establishment available to Industrial Coordinators in the Area Vocational and Technicals Schools in Oklahoma, as well as other officials, for training information purposes.

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[8] U. S. Bureau of the Budget, Standard Industrial Classification Manual: 1967 (Wahington: U. S. Government Printing Office, 1968).

[9] Ibid.

Estimates of On-Farm Jobs

Estimates of the manpower demand in the on-farm agricultural sector for the Cycle II report were prepared for OTIS by Dr. Luther Tweeten of the Agricultural Economics Department at Oklahoma State University. His report in complete form is as follows:

> One arrives at different estimates of on-farm manpower requirements for persons trained in vo-ag, depending on assumptions used. Three estimates are presented below to illustrate. The estimates apply to 1970 and in general to the first five years of the 1970's.
>
> 1. Based on the assumption that all farm operators retire or die in the decade after they reach 65 and on expected mortality among all farmers based on standard life tables, 23,776 farm operators will die or retire from 1965 to 1974.
>
> Based on survey data indicating that only 36 percent of all farm land transactions and sales constitute single units available for occupancy, only 856 of the above openings can be expected to constitute a new start in farming in 1970 and other years on the average in the early 1970's.

Assuming that all hired workers employed 150 days or more need vocational training in agriculture, and based on mortality and retirement data as above, 144 new starts are available each year for hired workers with training in vocational agriculture.

The requirements for 856 operators and 144 hired workers constitute total requirements of 1000 workers.

2. A shortcoming of approach 1 is that it does not necessarily estimate opportunities on adequate size units. For some years, farms with sales of $10,000 and over have been considered adequate size units. Replacement needs for operators of farms with sales of over $10,000 are projected to average 266 per year from 1965 to 1974 based on death and retirement. This need coupled with hired labor replacement requirements for 144 workers, constitutes a total on-farm requirement of 410 persons trained in vo-ag. each year.

3. An economic farming unit will require sales of at least $20,000 annually in the 1970's. The expected annual replacement are 98 operators per year to take over farms with sales over $20,000 occasioned by death or retirement of present operators. While smaller farms are not economic units, they can consolidate to become economic units. Assuming all farms made available that have gross sales under $20,000 consolidate to form $20,000 sales units, the total requirements for new operators on farms with $20,000 or more sales is 509 per year. Adding hired labor, the demand is 653 per year. Manpower requirements and replacement ratios of these three estimates for the eleven regions are listed in the attached table. [Table IX]

Summary and Comments

For the three estimates above, estimate 1 is the "best" estimate of what will happen. Approximately 856 persons will be required each year to fill positions in managing and operating farms. We may check this estimate by examining the farming opportunities created in the past. From 1954 to 1964, 1,393 persons below employment age in 1954 entered farming. During the same period, 6,134 persons of the age 25 or less in 1954 had obtained farms by 1964 and 2,841 new farms were created by 1964 for persons between 25 and 34 in 1954. Thus, the new entrants

TABLE IX

MANPOWER REQUIREMENTS IN FARMING IN OKLAHOMA, 1965 to 1974

Regions	Number of Entrants	Estimate 1		Estimate 2		Estimate 3		Number of Hired Workers Needed
		No. of farm operators needed	Replacement ratios (%)	No. of farm operators needed	Replacement ratios (%)	No. of farm operators needed	Replacement ratios (%)	
Oklahoma City SMSA	679	322	47.4	122	18.0	209	30.8	85
Tulsa SMSA	921	307	33.3	72	7.8	156	16.9	80
Northwest	1,697	624	36.8	327	19.3	526	31.0	139
North-central	3,058	1,308	42.8	709	23.2	1,092	35.7	184
Northeast	2,072	822	39.7	160	7.7	389	18.8	86
North-central	1,535	680	44.3	100	6.5	284	18.5	67
Mid-eastern	2,703	960	35.5	116	4.3	372	12.1	155
Southwest	2,194	802	36.6	425	19.4	678	30.9	201
Southwest-central	2,302	866	37.6	371	16.1	618	26.8	207
South-central	1,748	757	43.3	139	8.0	353	20.2	105
Southeast	2,554	1,109	43.4	118	4.6	415	16.2	133
Total	21,463	8,557		2,659		5,092		1,442

Estimate 1. Assuming 36 percent of all farm land transactions and sales are available for a new start.

Estimate 2. Replacement needs for operators of farms with sales of $10,000 or over.

Estimate 3. Replacement needs for operators of economic farming units (sales of $20,000 and over) assuming that all small farms with sales under $20,000 can be consolidated to become economic units.

to farming during 1954 to 1964 were 10,368. If the past trend persists and the farm numbers continue to decline, we may expect 735 net openings per year. This estimate is slightly lower than our estimate 1 for two reasons: first, it is a new estimate; the gross number of entrants, although not estimable, is higher. Second, the downtrend in farm numbers and workers is beginning to slow in Oklahoma. It is well to remember that access to credit will be more important than training in vocational agriculture in determining who will enter farming. Not all new entrants will have vocational agriculture.

Hired labor employed on farms more than 150 days per year can make use of training in vocational agriculture--in shop or production skills. Based on the trend in demand as well as replacement needs, an estimated 144 new workers will be needed in 1970 and subsequent years. Thus, the total on-farm demand for persons with training in vocational agriculture is estimated to be 1000 persons in 1970 based on estimate 1.

Estimate 3 is based on rapid progress toward economic size units. It may be an overly optimistic estimate of progress, but is definitely within the realm of possibilities due to capital and other barriers to entry into farming. The estimate, considered less likely than estimate 1, indicates a need for 509 managers and operators with training in vo-ag skills in 1970 and subsequent years on the average. Including hired labor, the estimate is 654 persons.

Training Program Costs

Existing information on program costs was collected by the State Department of Vocational and Technical Education and was provided by their fiscal officer to the OTIS staff. This information is utilized in Chapter III in order to help determine the program mix, i.e., the proportionate distribution of resources among occupational program service areas. The cost information was analyzed in conjunction with student follow-up information and supply and demand data to analyze program effectiveness.

Underdeveloped Human Resources

All available human resources data must be incorporated in OTIS on a systematic and continuous basis. One of the OTIS objectives was to gather available information on the number of unemployed, underemployed and disadvantaged (i.e., the physically handicapped, mentally handicapped and culturally deprived), who are not presently enrolled in occupational programs but who are trainable.

Within the initial scope of the OTIS project, the OTIS staff had no plans for a new design or survey for gathering such primary data. However, through the OTIS Advisory Committee it was learned that the Tulsa Chamber of Commerce in cooperation with the Tulsa representatives of such agencies as the Office of Economic Opportunity, the Tulsa Employment Service, the State Department of Vocational and Technical Education, and representatives of the Oklahoma Industrial Development and Park Department were formulating plans for a human resources study in the Tulsa area. It was felt that this would be an excellent opportunity for a pilot study on underdeveloped human resources in relation to the objectives of the OTIS project. The Manpower Committee of the Tulsa Chamber of Commerce, under the direction of Mr. Joseph Robinson, a Tulsa industralist, and member of the OTIS Advisory Committee and State Board for Vocational and Technical Education, collected the information, which will be analyzed at a future date by the OTIS staff. Basic student characteristics data obtained from OTIS 2, now Form 6000A, will be used in conjunction with the data gathered in the Tulsa area to determine who the disadvantaged are, to what skill level they can be trained, and the vocational and technical education programs which would meet their needs most effectively. Certain information on the disadvantaged is now available from analysis of OTIS 2 and is utilized in Chapter III.

Reports based on the analysis of the information gathered through the survey will be disseminated to the coordinating agencies noted previously as well as to the State Department of Vocational and Technical Education and to government officials.

Socio-Political Involvements

Social-political involvements is used here to refer to the co-operation, coordination, and commitments necessary for the successful inter-agency efforts demanded by OTIS. It is a recognition of the fact that data collection and analysis can be meaningless without the involvement and commitments of key decision-makers.

The problem of identifying and controlling the determining factors essential to effective political coordination is a universal problem with specific relevance to vocational training. Intragroup and intergroup relations within and between public agencies vary. The establishment of inter-agency commitments and meaningful interdependencies based on rational decision-making information is one of the primary purposes of this project. The realization of OTIS, and the implementation of the rational operational procedures and changes to be derived from OTIS, are dependent on the successful coordination of all relevant agencies at all levels of government.

The first of four meetings of the OTIS Advisory Committee (See Appendix F for complete list of members and alternates) was held June 5,

1969. Key representatives of several organizations important to the implementation of specific OTIS objectives met to discuss the past and future of the OTIS project. Both the general and specific roles of the Advisory Committee were discussed and approved. The committee agreed that the gathering of specific demand estimate data, by identified establishments, was crucial to the success of OTIS, particularly in the manufacturing sector, and recommended that plans continue for a two-day workshop to train vocational and technical educators as demand data collectors. This workshop was held on June 9 and 10, 1969 on the Oklahoma State University campus. A sub-committee was designated to confer on demand estimates, and those representatives who were in a position to do so stated that they would "open doors to industry" in collecting demand estimates.

A second Advisory Committee meeting was held September 4, 1969. This meeting was devoted to an overall OTIS progress report. Detailed reports were made concerning the OTIS components i.e., Supply, Demand, Cost, Benefit (Follow-Up), Underdeveloped Human Resources, and Socio-Political Involvements. The State Director of Vocational Education stated that Industrial Training Coordinators would not be employed at the area vocational and technical schools to serve as the major liaison between industry and training programs in order to implement the Occupational Training Information System. Oklahoma State University has contributed toward a proposal to fund the further training of the Industrial Training Coordinators. This is considered a milestone in cooperation between these two agencies. It is intended that these Industrial Training Coordinators will be utilized as data collectors by the OESC and the State Department of Vocational and Technical Education. The stated need for specific labor market information by the vocational and technical education people has been accepted by the OESC for future labor market surveys, even though the method of obtaining this specific information has not been agreed upon. It was pointed out that a proposal had been submitted by the State Director of Vocational and Technical Education, to the U. S. Office of Education to train manpower training coordinators for the purpose of implementing an information system such as OTIS.

The third OTIS advisory meeting was held November 20, 1969. The main purpose of the meeting was to critique the OTIS methodology and the rough draft of the final report on the system. On the basis of the reflections of the committee, the OTIS staff decided to modify the rough draft in order to produce the second yearly cycle document on January 29, delaying the final report on OTIS to the Manpower Administration, U. S. Department of Labor, until approximately April 30, 1970. The two primary reasons for this delay were to (1) measure the effects, especially on the State Vocational-Technical Annual Plan, of the Cycle II report and (2) to disassociate an action report from a final project report. It is expected that the OTIS Advisory Committee will accept its interagency committment to continue the information system by effecting the transition of OTIS from a prototype to a fully operational system.

Interfacing of Manpower Supply and Demand

The demand projections (see the section on demand for details) were used in the interfacing of supply and demand data. The major purpose of the interfacing is to reveal anticipated differences between manpower supply and demand which have implications for vocational program planning. The procedures for relating or interfacing instructional program titles included the recent research work of Emanuel Weinstein, presently serving with the U. S. Office of Education as an Occupational Analyst, and others. This research relates the U. S. Office of Education Instructional Codes to the Dictionary of Occupational Titles and culminates in the July 1969 publication of the Office of Education, U. S. Department of Health, Education, Welfare and the Manpower Administration, U. S. Department of Labor, entitled Vocational Education and Occupations.

Interfaced data on supply and demand (See Appendix I-1 for tables showing regional and statewide totals) were compiled for the state as a whole, for the metropolitan areas of Oklahoma City and Tulsa, and for each of nine other geographic regions. Figure 8 presents an outline of the regions utilized in this study. The eleven regions selected jointly by the Oklahoma Employment Security Commission and the State Department of Vocational and Technical Education are as follows: Oklahoma City SMSA (Standard Metropolitan Statistical Area), Tulsa SMSA, Northwest, North-Central, Northeast, East-Central, Mid-Eastern, South-west, Southwest-Central, South-Central, and Southeast.

The results of the interfacing were disseminated in the form of projected differentials of supply and demand to the Director of the State Department of Vocational and Technical Education, the State Board of Vocational and Technical Education, local boards, and government officials.

How to Use the Interfaced Tables Showing Net Additional Manpower Requirements for 1970

In the upper left-hand corner, the geographic region or statewide total under discussion is designated. The left-hand column is devoted to the listing of jobs or job clusters by Dictionary of Occupational Titles (D.O.T.) codes. The right-hand column is devoted to training programs or clusters of programs which can be most appropriately interfaced (matched) with demand. These programs refer primarily to the

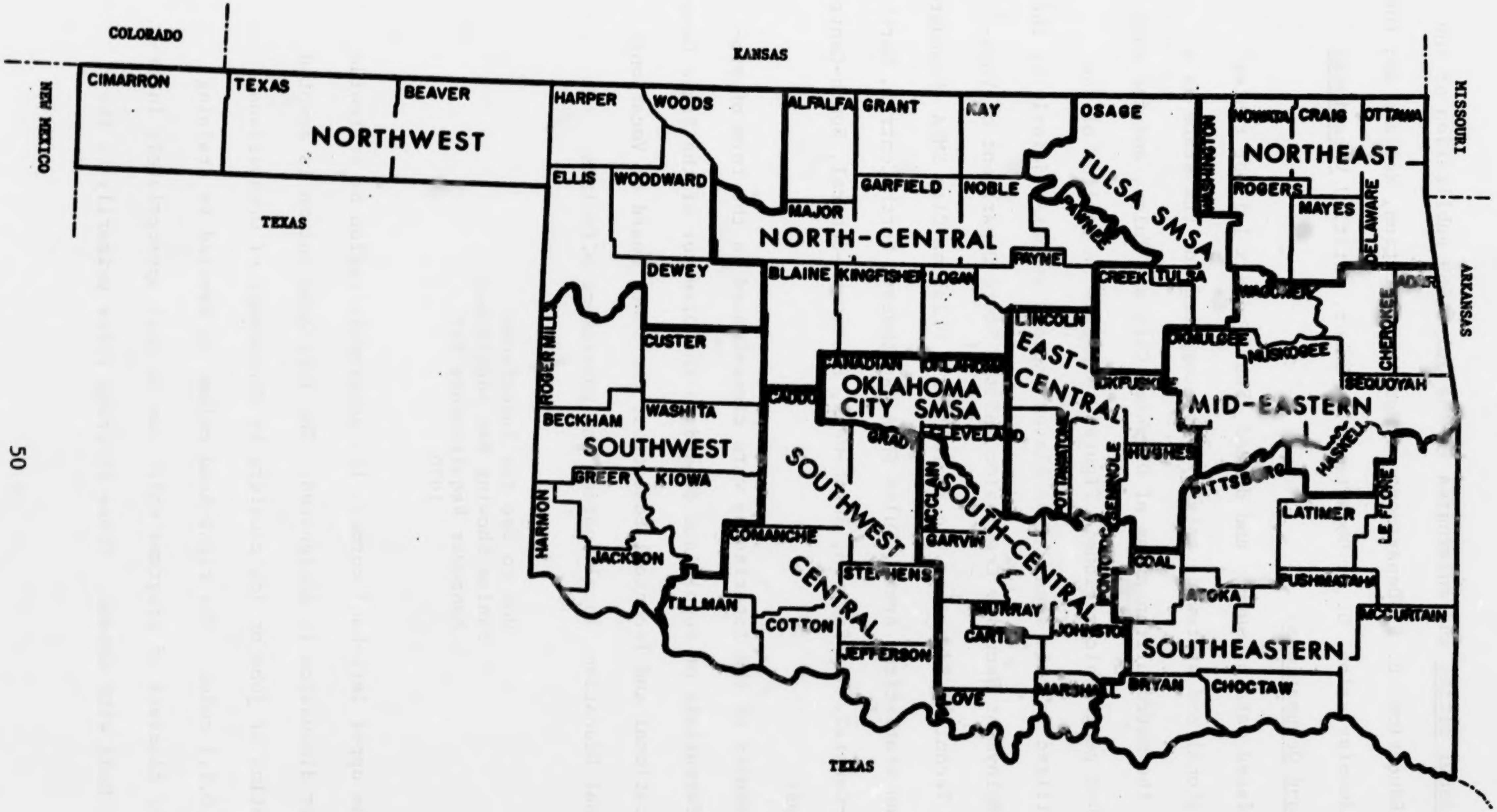
COLORADO
KANSAS
MISSOURI
ARKANSAS
NEW MEXICO
TEXAS
TEXAS
NORTHWEST
NORTH-CENTRAL
NORTHEAST
TULSA SMSA
EAST-CENTRAL
MID-EASTERN
OKLAHOMA CITY SMSA
SOUTHWEST
SOUTHWEST CENTRAL
SOUTH-CENTRAL
SOUTHEASTERN
CIMARRON
TEXAS
BEAVER
HARPER
WOODS
ALFALFA
GRANT
KAY
OSAGE
WASHINGTON
NOWATA
CRAIG
OTTAWA
ELLIS
WOODWARD
MAJOR
GARFIELD
NOBLE
PAWNEE
ROGERS
MAYES
DELAWARE
DEWEY
BLAINE
KINGFISHER
LOGAN
PAYNE
CREEK
TULSA
WAGONER
CHEROKEE
ADAIR
ROGER MILLS
CUSTER
CANADIAN
OKLAHOMA
LINCOLN
OKMULGEE
MUSKOGEE
SEQUOYAH
BECKHAM
WASHITA
CADDO
GRADY
CLEVELAND
OKFUSKEE
HUGHES
POTTAWATOMIE
SEMINOLE
HASKELL
PITTSBURG
LE FLORE
LATIMER
GREER
KIOWA
HARMON
JACKSON
COMANCHE
MCCLAIN
GARVIN
PONTOTOC
COAL
ATOKA
PUSHMATAHA
MCCURTAIN
TILLMAN
COTTON
STEPHENS
MURRAY
CARTER
JOHNSTON
JEFFERSON
LOVE
MARSHALL
BRYAN
CHOCTAW

FIGURE 8. OUTLINE OF REGIONS IN OKLAHOMA USED FOR THE MATCHING OF MANPOWER SUPPLY AND DEMAND DATA

public training programs, although in between the job and training program listings are a series of columns devoted to demand, adjusted supply, and demand minus adjusted supply, respectively. The "adjusted" designation, as was discussed earlier in this chapter, refers to the percentage of graduates estimated to be available for placement in Oklahoma during the year of graduation. Table X shows the first page of the statewide totals.

The tables are constructed to yield the information needed for initial planning. For example, one can see in Table X that the total number of groundskeepers estimated to be in demand equals 183. The adjusted full-time public school graduates available for placement figure indicates a supply of 21, while the "other" column shows a supply of 27, or a total of 48. The supply of 48 was then subtracted from the demand of 183, with a remaining need of 135 shown in the demand minus adjusted supply column.

TABLE X

NET ADDITIONAL MANPOWER REQUIREMENTS
(Adjusted)

1970

STATEWIDE TOTALS

JOBS	DEMAND	ADJUSTED SUPPLY					DEMAND MINUS ADJUSTED SUPPLY	TRAINING
CLUSTERS OF OCCUPATIONS AND D.O.T. CODES		Full-Time Public	Adult Public	MDTA	Private Schools	Other**		CLUSTERS OF PROGRAMS AND INSTRUCTIONAL CODES
AGRICULTURE OCCUPATIONS % adjustment*		28.3%	20%	100%				
407.884 Grounds Keeper	183	21				27	135	010500 Horticulture
624.281 Mechanic, Farm Equipment	16	7		90				170304 Farm Engine Repair
421.883 Farm Hand, General	144							
Farm Manager, Supervisor or Owner	856							
		366				5		010300 Agriculture Mechanics
		761						010100 Production Agriculture
Total	1016	1134		90		5	(213)	Total
TOTAL AGRICULTURE OCCUPATIONS	1199	1155		90		32	(78)	
DISTRIBUTIVE OCCUPATIONS % adjustment*		40.6%	20%	100%				
250.258 Salesman, Insurance	136					57		
250.358 Salesman, Real Estate	30					2		041700 Real Estate
250 thru 259 Sales Occupations (Services)	182					26		
260 thru 289 Sales Occupations (Commodities)	1428					878		
290.000 Sales Clerk	2020					642		
292.000 Routeman	309					85		
		504						040000 Distributive Education
		35						010400 Agriculture Products

*The percent adjustment was used to determine the adjusted supply of graduates available for placement in Oklahoma.

**Includes On-Job-Training and persons registered with the Oklahoma Employment Security Commission.

CHAPTER III

ANALYSIS OF DATA

The overall purpose of this project was to provide data on which to base decisions relative to changes in the State Plan for Vocational and Technical Education in Oklahoma as manifested not only in the plan itself but also in the new patterns of occupational offerings and enrollments. These changes should follow the directions set forth in the Vocational Education Amendments of 1968.

This chapter is concerned with the presentation of exemplary analyses of data considered relevant to Oklahoma's program mix. The data were collected by the Occupational Training Information System project staff with the help of the Oklahoma State Department of Vocational and Technical Education, the Oklahoma Employment Security Commission, the Association of Private Schools and other co-sponsoring and cooperating agencies.

The chapter consists of three parts. The first, written by the staff of the Research and Planning Division of the Oklahoma Employment Security Commission, deals with an overview of supply and demand in the state and in the eleven regions. Part two was written by the OTIS staff and presents an analysis of follow-up data related to full-time public and private school graduates and dropouts. The third part was also written by the OTIS staff and deals with selected parameters used in analyses of full-time occupational training on a service division basis.

Mathematical, or other, models (such as the relationship between supply and demand) do not make decisions nor can they replace judgment on the part of the decision makers. The analyses on subsequent pages are designed to provide pertinent data for determining alternative courses of action in the process of decision making.

It should also be understood that considerations of manpower supply and demand are not the only criteria for statewide manpower planning. There are other and very important factors. But unless economic impact of education is to be given no weight at all, some form of manpower planning is both desirable and inevitable.

Although every effort was made to make this presentation as accurate as possible, caution should be taken not to use this exemplary analysis in any absolute sense. A more realistic approach would be to utilize the analysis as representing trend only. It is anticipated and recommended that the decision makers utilizing this information system will conduct supplemental analyses before making or modifying manpower policy decisions.

PART I

AN ANALYSIS OF MANPOWER SUPPLY AND DEMAND DATA

One of the greatest areas of need in today's manpower planning is to accurately gauge the supply and demand for labor by individual occupation. This is becoming increasingly important in Oklahoma as a result of the accelerated economic growth of the past few years and the manifold opportunities for further development that continue to exist.

This part of Chapter III presents highlights and summary tables of demand and supply in an effort to point out expected shortages and surplus of trained manpower and provide some explanation of the data. Specifically, forecast demand and supply data have been compared for more than 150 occupations in eleven regions of Oklahoma and on a statewide basis. This interfacing of supply and demand indicates expected trained manpower shortages in many of the occupations and over-supply in some others. It should be noted, however, that these figures are estimates and do not attempt to predict exact occurrences but, rather, general trends.

A degree of caution should be exercised when examining the interfaced tables. Some of the reasons why one should use care when reviewing these figures are:

1. The matching of "Full-time Public Supply" with the demand for the given occupations does not, in reality, always present a correct picture. The supply column counts all persons expected to graduate from training programs and would likely be available for work in Oklahoma. In other words, an attempt has been made to take adjusted total public supply and match it to demand for only a few selected occupations. To be more

specific, there are numerous jobs outisde the scope of this study for which many of the people included in the supply could possibly qualify and accept employment. Actually, about two-thirds of Oklahoma's workers are in jobs not interfaced in this study. Many of these occupations are compatible with the jobs surveyed here. For example, a student in auto mechanics may specialize as a front-end, brake, or transmission man. A large share of the full-time public supply most likely will gain employment in these other jobs. Thus, the problem of comparing total statewide supply with demand in only a few occupations is that the "Demand Minus Adjusted Supply" column will be significantly understated in at least a few cases. In most cases, the figures in this last column could be increased substantially and present a more true-to-life picture.

2. Similarly, it is questionable if some of the persons counted as full-time public supply could actually enter employment in the specified occupation shown. Many could more likely obtain jobs as a helper or possibly as an apprentice. Some of the jobs against which the supply is being matched usually require several years experience to acquire full competence.
3. Care should also be exercised when viewing the figures listed in the "other" column. This list primarily includes unemployed persons registered with the Oklahoma State Employment Service. Some of the registrants are probably not fully qualified in the occupation given or might have certain personal or family situations detracting from their job readiness. Others would not meet employers' requirements for various reasons. Therefore, probably, a smaller number than that shown would actually be available or

able to gain employment in the occupation shown.

4. It should also be pointed out that, in some cases, figures shown for the eleven individual regions will not add up to the state total. In demand estimates, for example, it is sometimes impossible to restrict an exact need to one specific area. Also, some demand which was included statewide was not shown in some regions to avoid disclosure of staffing needs of individual firms.

The occupations as selected by the OTIS committee, were arranged in seven broad "occupational groups", namely Agriculture, Distributive, Health, Home Economics, Office, Technical, and Trade and Industrial. Total demand statewide for the seven groups numbered slightly over 27,000 whereas demand reduced by expected supply totaled about 7,200 workers.

Statewide

The state of Oklahoma has undergone rapid economic, sociological, and demographic changes in the past few years. For example, the population of the state increased an estimated 10.4 percent between April 1, 1960 and July 1, 1969. Of more importance, however, have been the major shifts in habitation. Some 45 state counties reflected population gains during that period, while the remaining 32 showed losses. Most of those counties reporting decline were rural and agricultural regions, while the increase occurred generally in urban areas. These changes reflect the rural-to-urban shift that has become prevalent in the state and the nation. In fact, nearly one-half of Oklahoma's population now reside in the three state SMSA's (Oklahoma City, Tulsa and Lawton).

TABLE XI

SHIFTS IN POPULATION AND COMPOSITION OF LABOR FORCE IN 1969

Item	Numbers
Population, July 1, 1969[1]	2,570,300
Population, April 1, 1960[2]	2,328,284
Total Labor Force, June 1969	1,068,700
Unemployment	43,800
Unemployment Rate	4.1
Idled by Labor Disputes	5,000
Total Employed	1,024,400
Agriculture	144,000
Nonagriculture	880,400
Domestic Service, Self-employed and Unpaid Family Workers	118,000
Wage and Salary	762,400
Mining	40,900
Construction	39,100
Manufacturing	130,900
Public Utilities	54,200
Trade	166,500
Finance-Insurance-Real Estate	36,300
Service	108,700
Government	185,800

Oklahoma's labor force has also experienced notable changes during the past nine years. Between June 1960 and the comparable month of 1969, the civilian labor force increased by 102,500, or 10.6 percent. During that same period, statewide unemployment decreased by 2,300. Comparing annual average unemployment for 1960 and 1969, however, the figure dropped by 10,000 during this period. Agricultural employment also showed a considerable decrease between June of 1960 and 1969. Specifically, during June 1969, some 56,000 fewer state agricultural workers were counted than had been recorded nine years earlier. This again reflected the trend away from the state's previously agriculture oriented society to one of a more job-producing nonfarm wage and salary economy.

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[1] Oklahoma Population Estimates, Oklahoma Employment Security Commission, February, 1970.

[2] U. S. Census of Population 1960, Oklahoma PC(1)-38B.

Between June of 1960 and 1969, significant expansion occurred in the state's nonfarm wage and salary employment. Specifically, the number of state wage and salary jobs increased by 170,100, or more than 28 percent during the period. The advance was broad-based, with only one industry division, mining, reflecting a loss in employment over that span. The number of mining workers was down 5,300, primarily due to automation, cutback in exploration and the consolidation of firm offices.

Greatest proportionate growth among Oklahoma's wages and salary industry divisions during the nine years came in service. Employment in that division increased by 47.5 percent, providing 35,000 new state jobs. Much of this growth can be traced to rising population, higher personal incomes and a significant expansion in the medical and other health service components. The future outlook for the service division is good. As the number of Oklahoma inhabitants and their income continue to increase, more demands should be made of this division, causing related employment to continue its steady growth.

Close behind the service division in proportionate growth was manufacturing. Between June of 1960 and 1969, Oklahoma factory employment increased by 42,000 new jobs, or 47.2 percent. Largest industrial contributors to the nine-year rise were durable goods sectors such as metal processing and machinery. In fact, durables, collectively, accounted for nearly eight of ten new plant jobs. Non-durable goods, however, added more than 9,000 workers, many in apparel products and, to a lesser degree, in printing and publishing.

Tulsa and Oklahoma City SMSA's, where six of every ten factory jobs are located, continue to dominate the manufacturing picture. In the past few years, however, industrialization has spread across the state into various smaller communities. During this period, many new firms have been attracted to the rural areas, due in part to the large supplies of available labor. Statewide, these new establishments manufacture products ranging from airplanes and missile components to carpet and apparel. These supplement such traditional industries as food products, printing-publishing, refining, glass, and brick. All indications point to continued advances in manufacturing production, payrolls, and employment. For example, two nationally-known tire manufacturers should begin full production in the near future. In addition, several new facilities are either under construction or have recently begun production in various locations; items manufactured by these plants will also be well diversified.

Government outpaced all other nonfarm wage and salary divisions with the largest numerical advance over the nine-year span. Specifically, government provided 55,300 new jobs between June of 1960 and 1969, an increase of more than 42 percent. The bulk of the gain has been scattered across Oklahoma in the state and local sectors. Much of the upswing was attributed to increasing requirements for educational personnel. Government employment should continue its steady increase in the future. Expansion in the state and local sector should reflect needs for better public services such as improved highways, bigger welfare and health programs, and expanded recreational facilities. At the local level, the rural-to-urban shift should continue its contribution to the growth in metropolitan areas and other cities. This, in turn, will create requirements for added personnel in such areas as police and fire protection, sanitation and hospital operations.

Other Oklahoma nonfarm wage and salary divisions have also reflected notable additions to employment during the 1960 to 1969 period. For instance, the number of finance-insurance-real estate workers increased by more than one-third in the nine-year span. Wholesale-retail trade employment expanded by almost 20 percent. Advancing to a lesser degree were public utilities, up 10.6 percent, and construction employment, ahead by slightly more than five percent for the period.

Occupational Demand

The office occupational group reflected the largest gross demand of the seven categories as well as the greatest shortage of workers after expected supply was subtracted. Largest demand for workers in this group should be for the general office clerk. However, many of the opportunities in this as well as other office jobs should come as a result of replacement needs rather than expansion. Other office occupations reflecting large gross demand include secretary, clerk-typist and stenographer.

About half of the occupations surveyed fell into the trade and industrial classification. Total demand for these jobs numbered almost 7,800, while supply was estimated to be more than 6,300, resulting in a shortage of nearly 1,500 such trained workers. Largest demand in this group should be for cooks, while need for welders, production machine-tool operators, carpenters, all-round machinists and automobile mechanics should also be significant.

Demand for workers in the distributive occupation group is expected to be notable during the coming year. Total need for the six jobs surveyed in this category should exceed 4,100. Demand for sales clerks, at

2,020, is the largest of all occupations in the study. The need for commodities salespersons ranked fourth in the same comparison, with an expected demand for more than 1,400 workers in this field. Net demand after supply for the distributive group should stand at about 1,800, to rank second among the seven occupational groups.

The need for medical manpower is becoming one of the most critical problems in the labor market. Total demand for the eleven health occupations surveyed is anticipated to reach nearly 3,200 this year, while supply is expected to number more than 2,000, resulting in a shortage of about 1,100 trained workers. Demand should be especially prevalent for nurses and nurse aides.

Only four occupations were included in the home economics category. Demand for these jobs should total about 1,100 workers, with a shortage after supply of approximately 250 jobholders. Demand for sewing machine operators accounted for more than 90 percent of this group's total.

Two of the seven occupational groups reflected anticipated over-supply of workers during the forecast period. One of these was the agriculture category where a negative demand of 62 was forecast. The other category, technical occupations, is expected to have an over-supply of 471 workers. This group includes such jobs as draftsmen, programmers and various types of technicians.

TABLE XII

DIFFERENTIAL OF MANPOWER SUPPLY AND DEMAND

		Supply					
Occupation Group	Demand	Full-Time Public	Adult Public	MDTA	Private Schools	Other	Demand Minus Supply
Total, All Groups	27,033	5,790	421	1,355	1,563	10,652	7,179
Agriculture	1,215	1,155		90		32	(62)
Distributive	4,105	586				1,690	1,829
Health	3,171	478	16	176	76	1,313	1,112
Home Economics	1,119	57	12			796	254
Office	8,677	864	136	110	737	3,767	3,063
Technical	955	608	110		463	245	(471)
Trade & Industrial	7,791	2,042	147	979	363	2,809	1,454

OKLAHOMA CITY SMSA

The Oklahoma City Standard Metropolitan Statictical Area (SMSA), Canadian, Cleveland and Oklahoma Counties, contains more than 2,100 square miles in the center of the state. Population of the SMSA was estimated to total 642,100 for July 1969, a notable increase of 130,267, or 25.5 percent since 1960. Estimated population for Oklahoma County stood at 521,800 for July 1969, while the number of Cleveland County residents reached 84,700 and Canadian County added 35,600 to the SMSA total.

TABLE XIII

POPULATION AND COMPOSITION OF LABOR FORCE

Item	Numbers
Population, July 1, 1969[1]	642,100
Population, April 1, 1960[2]	511,833
Total Labor Force, June 1969	297,300
Unemployment	11,600
Unemployment Rate	3.9
Employment	285,700
Agriculture	5,200
Nonagriculture	280,500
Domestic Service, Self-employed and Unpaid Family Workers	28,100
Wage and Salary	252,400
Mining	6,900
Construction	13,400
Manufacturing	35,200
Public Utilities	17,300
Trade	56,000
Finance-Insurance-Real Estate	15,500
Service	37,300
Government	70,800

The June 1969 civilian labor force for the Oklahoma City SMSA numbered 297,300, of which some 3.9 percent were unemployed. Slightly less than two percent of the 285,700 employed were working in agricultural jobs. At the same time, nearly nine of every ten persons employed in the SMSA were non-farm wage and salary jobholders.

The wage and salary sector in the Oklahoma City SMSA has enjoyed tremendous growth during the past few years. In fact, from June 1960 to the like month of 1969, such employment advanced by more than 41 percent. This increase has resulted in 74,200 new Oklahoma City area jobs in the wage and salary total.

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[1] Oklahoma Population Estimates, Oklahoma Employment Security Commission, February, 1970.

[2] U. S. Census of Population 1960, Oklahoma PC(1)-38A

Pacing the way of wage and salary growth has been the manufacturing division. Between 1960 and 1969, Oklahoma City factory employment increased by more than 70 percent, thus creating 14,600 new plant jobs. Many new industries have located in the metropolitan area in recent years. Concurrently, numerous older plants have expanded significantly. As a result, manufacturing has become widely diversified. Today the area of manufactured products include aircraft and parts, telephones and telephone exchange equipment, space electronic components, computers, metal fabrication, meats, grain flour milling, building materials, and others. The future for manufacturing in the Oklahoma City SMSA remains bright. New industries continue to choose the area for new plants and many existing firms are continually expanding. Examples of new industry in the SMSA are a major producer of tires which should start full production in the near future as well as the headquarters of a national food processor which was recently moved to Oklahoma City. More new manufacturing plants and many expansions in present facilities are anticipated in the near future, which should cause manufacturing employment to continue its notable growth.

Employment in the service division has also increased rapidly in recent years. Between June 1960 and 1969, such employment grew by nearly 67 percent, providing 14,900 new wage and salary jobs in the Oklahoma City area. Much of the growth in this division can be attributed to the needs of a rising population with increased personal income. Furthermore, several private colleges and specialized schools have been established or have expanded facilities in recent years. Employment in the area's many private hospitals and other medical facilities has also been expanding rapidly, reflecting not only increased population, but the public's growing awareness of medical and health needs. Employment in the service division should continue its marked growth. If population and incomes maintain their current trend, additional demands may be placed on this division to provide the services desired thus creating more job requirements.

From June 1960 to 1969, Oklahoma City SMSA government employment increased more than 50 percent and provided 24,100 new positions. This was by far the largest numerical job growth for any of the eight nonfarm wage and salary divisions. There are numerous reasons for the size and steady growth in government employment. Several federal installations are located in the Oklahoma City SMSA. The Oklahoma City Air Material Area (Tinker Air Force Base) accounts for a considerable proportion of all area government workers. The Federal Aviation Administration Aeronautical Center and the Veterans Administration hospital also add sizable numbers of workers to the total. In addition, several other public medical facilities have many government jobholders.

In addition to federal government facilities, the state capitol complex in Oklahoma City accounts for a sizable portion of the workers, and as state population increases, so, too, must the number of workers providing governmental services to those persons. Also, the University of Oklahoma and Central State College, two state institutions of higher learning in the SMSA, have experienced rapid growth in enrollment and employment in the past few years. Finally, there are many persons employed in the local government sectors, such as teachers, firemen and policemen.

Other nonfarm wage and salary industry divisions also reflected employment gains from 1960 to 1969. Finance-insurance-real estate, public utilities and trade firms experienced job increases ranging from more than 40 percent to about 28 percent. However, two industry divisions, mining and construction, reflected losses in employment during the nine-year span. These reductions were relatively nominal declines of less than three percent during the period.

Occupational Demand

Thirty percent of total statewide demand in the seven occupational groups surveyed was accounted for in the Oklahoma City SMSA. In similar light, about 25 percent of statewide supply totals were counted in these three counties, resulting in an estimated net demand of nearly 3,400 workers.

Demand for additional workers in the Oklahoma City SMSA followed approximately the same trend as the state as a whole. Largest need was for office workers, followed by trade and industrial jobholders. Distributive and health occupations ranked third and fourth in the comparisons. Two occupation groups displayed expected over-supply, the technical category by 106 workers and home economics occupations by some 35 jobholders.

Largest gross demand for the surveyed occupations in Oklahoma City is anticipated to be for general office clerks, followed by secretaries, clerk-typists, commodities salespersons and sales clerks. Other jobs which should reflect significant total demand include civil engineering technician, all-around machinist, production machine tool operator, aircraft accessories mechanic, electronics assembler, carpenter and nurse.

Many job opportunities should exist in the Oklahoma City area during the forecast period and quite a number of worker shortages may occur. Some of the vacancies may be filled by persons migrating to Oklahoma City from rural areas of the state. Although this movement may decrease some shortages in this area, it may increase the demand problem in some outlying regions where shortages already exist.

TABLE XIV

DIFFERENTIAL OF MANPOWER SUPPLY AND DEMAND

		Supply					
Occupation Group	Demand	Full-Time Public	Adult Public	MDTA	Private Schools	Other	Demand Minus Supply
Total, All Groups	8,352	842	197	608	999	2,333	3,373
Agriculture	101	24		15		3	59
Distributive	1,233	123				556	554
Health	823	137	7	143	76	222	238
Home Economics	55	10	12			68	(35)
Office	3,386	184	77	130	379	786	1,830
Technical	371	60	46		308	63	(106)
Trade & Industrial	2,383	304	55	320	236	635	833

Tulsa SMSA

The Tulsa Standard Metropolitan Statistical Area (SMSA), Creek, Osage and Tulsa Counties, is located in eastern Oklahoma with its northern-most limits bordering Kansas. This area comprises more than 3,800 square miles and includes Oklahoma's largest county geographically, Osage. Population of the SMSA was estimated to total 467,600 for July 1969, an increase of 48,626, or 11.6 percent since 1960. The number of inhabitants in Tulsa County was estimated at 392,900, while Creek County population totaled 46,500 and Osage County added 28,200 to the SMSA.

TABLE XV

POPULATION AND COMPOSITION OF LABOR FORCE

Item	Numbers
Population, July 1, 1969 [1]	467,600
Population, April 1, 1960 [2]	418,974
Total Labor Force, June 1969	217,400
Unemployment	8,900
Unemployment Rate	4.1
Idled by Labor Dispute	500
Employment	208,000
Agriculture	5,200
Nonagriculture	202,800
Domestic Service, Self-employed and Unpaid Family Workers	22,700
Wage and Salary	180,100
Mining	14,100
Construction	9,300
Manufacturing	44,200
Public Utilities	16,600
Trade	39,900
Finance-Insurance-Real Estate	9,100
Service	29,000
Government	17,900

The Tulsa SMSA civilian labor force numbered 217,400 for June 1969. Some 4.1 percent of that figure were counted as unemployed, while 500 workers were idled by labor disputes. Of the 208,000 persons employed, about two percent were in agriculture and almost 90 percent were nonfarm wage salary jobholders.

The wage and salary division total in the Tulsa SMSA has experienced substantial growth during the past few years. Specifically, from June of

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[1] Oklahoma Population Estimates, Oklahoma Employment Security Commission, February, 1970.

[2] U. S. Census of Population 1960, Oklahoma PC(1)-38A.

1960 to 1969, such employment increased by more than 30 percent, resulting in 42,300 new wage and salary jobs in the Tulsa area.

Greatest proportionate job growth among the Tulsa wage and salary industry divisions during the nine years came in service. Employment in that division increased by more than 55 percent to provide over 10,000 new area jobs. Much of this gain can be attributed to population growth, rising incomes, and a general trend of persons desiring more services of all kinds. Also responsible were a marked expansion in the medical and other health services category and increases in several area private educational institutions of higher learning. The outlook for the service division in the Tulsa SMSA is favorable. As population and income continue to increase, this division should maintain its steady employment growth.

Leading the way with the largest absolute employment growth in the Tulsa SMSA was manufacturing. Specifically, between June 1960 and 1969, some 19,700 new plant jobs were created in the area, representing an almost 50 percent employment advance. Numerous new factories have located in the SMSA while many existing firms have expanded considerably. Products manufactured reflect wide diversification. To name a few, they include aircraft and and parts, petroleum, machinery, fabricated metals, oil field equipment, missiles and missile parts, brick and tile, as well as electrical and electronic parts. Furthermore, glass, chemicals, pottery, textiles, wearing apparel, food products, newspapers and periodicals are produced in the area. Significantly, Tulsa manufacturing employment comprised more than one-third of the June 1969 statewide factory total.

Probably one of the most important factors in future manufacturing growth in the Tulsa SMSA will be Tulsa's Port at Catoosa scheduled for completion in 1970. It has been estimated that at least $500 million would be invested in new area industry during 1970. The outlook then, for manufacturing in the Tulsa SMSA is very favorable.

Other Tulsa nonfarm wage and salary divisions also reflected notable employment gains during the 1960-1969 period. For example, the number of government jobholders increased by almost 50 percent in the nine year span while finance-insurance-real estate employment advanced by slightly more than 28 percent. Similarly, the number of trade workers expanded by about 23 percent during the same period.

The three remaining wage and salary industry divisions also experienced job growth during the nine years, but to a lesser degree than those already mentioned. Employment in public utilities increased by 8.5 percent, while the number of mining workers advanced by 5.2 percent. Construction employment remained relatively unchanged, increasing by only 1.1 percent in the 1960-1969 span.

Occupational Demand

Demand should be significant for most occupations in the Tulsa SMSA during the forecast period. Specifically, total demand for occupations in the seven surveyed groups in the three-county area is forecast to number more than 6,900, or about one-fourth of the state figure. Estimates of supply in the same area total about 3,900, approximately one-fifth of all estimated supply statewide.

All occupation groups except the home economics category are expected to experience a shortage of trained workers in the forecast period. The greatest need for additional jobholders comes for trade and industrial workers followed by office occupations and the distributive group. Only slight net demand is forecast in the agriculture, health, and technical occupations groups.

The occupation forecast to have the largest gross demand in the Tulsa SMSA is general office clerk, followed by commodities salesperson, sales clerk and secretary. Significant demand is also expected for all-round machinist, production machine tool operator, metal fabricator, automobile mechanic, aircraft structures and surfaces assembler and welder.

As in Oklahoma City, shortages of manpower may occur in a number of Tulsa located occupations unless additional training is accomplished or persons with these skills enter the area from other counties. Opportunities for additional workers should be prevalent in most occupational areas in Tulsa, which may attract some trained personnel from rural sections of the state.

TABLE XVI

DIFFERENTIAL OF MANPOWER SUPPLY AND DEMAND

		Supply					
Occupation Group	Demand	Full-Time Public	Adult Public	MDTA	Private Schools	Other	Demand Minus Supply
Total, All Groups	6,928	646	72	215	521	2,471	3,003
Agriculture	104	42				10	52
Distributive	1,018	114				309	595
Health	600	81	3	15		435	66
Home Economics	99	7				131	(39)
Office	2,241	125	3		283	879	951
Technical	323	54	3		111	97	58
Trade & Industrial	2,543	223	63	200	127	612	1,318

Northwest Region

The Northwest Region is comprised of the three Panhandle and five adjacent counties. Total population of the eight counties was estimated to total 72,700 for July 1969, an increase of 5.5 percent, or 3,779 inhabitants over the 1960 census. Almost two-thirds of the regions's population resided in the three largest counties, Woodward, Texas and Woods.

TABLE XVII

POPULATION AND COMPOSITION OF LABOR FORCE

Item	Numbers
Population, July 1, 1969[1]	72,700
Populaiton, April 1, 1969[2]	68,921
Total Labor Force, June 1969	29,120
Unemployment	680
Unemployment Rate	2.3
Employment	28,440
Agriculture	9,790
Nonagriculture	18,650
Domestic Service, Self-employed and Unpaid Family Workers	2,830
Wage and Salary	15,820

Total employment in the Northwest Region numbered more than 28,000 during June 1969, with more than a third of all workers engaged in agriculture. Some 15,820 nonfarm wage and salary jobholders were counted during the same period. Most of these persons were working either in government jobs for wholesale and retail trade firms in the region.

Occupational Demand

Demand for most surveyed occupations should be slight to non-existent in the Northwest Region. However, some need for workers in health, agriculture and office occupations may exist.

1/ Oklahoma Population Estimates, Oklahoma Employment Security Commission, February, 1970.

2/ U. S. Census of Population 1960, Oklahoma PC(1)-38A.

Much of the Northwest Region has had to face the problem of transition from a rural, agriculture-based economy to one of more job-producing activities of nonfarm industry. Economic growth has been slow and losses in population notable. The trend may be changing, however. New industry is moving into the eight-county area. The 1970 census should reveal the first population growth for the region since statehood. Placing much emphasis on new industry and the expansion of that already present, with added importance on human resources, more rapid economic growth should be experienced in the Northwest Region.

North-Central Region

The North-Central Region is composed of eleven contiguous counties encompassing more than 9,000 square miles lying just norht of the Oklahoma City SMSA and extending to the Kansas border. In July 1969 the population of the region was estimated to total 244,000. This figure was 8,725, or 3.7 percent greater than the 237,275 counted by the 1960 census. These counties, Garfield, Kay and Payne, accounted for almost two-thirds of the region's inhabitants.

TABLE XVIII

POPULATION AND COMPOSITION OF LABOR FORCE

Population, July 1, 1969[1]	244,000
Population, April 1, 1960[2]	235,275
Total Labor Force, June 1969	94,845
Unemployment	3,085
Unemployment Rate	3.3
Employment	91,760
Agriculture	18,615
Nonagriculture	73,145
Domestic Service, Self-employed and Unpaid Family Workers	9,840
Wage and Salary	63,305

The civilian labor force of the North-Central Region numbered about 95,000 for June 1969; some 3,085, or 3.3 percent of the total were un-employed. The job count of 91,760 included 18,615 workers in agriculture. Approximately two out of three persons employed in the region were wage and salary jobholders.

The largest regional wage and salary industry division was government. About one of four wage and salary workers was working for the government in the North-Central Region. Payne County, the home of Oklahoma State University, accounted for a large share of these workers. Many of the remaining jobs were counted in regional trade firms and manufacturing plants. A large share of the factory workers were located in Kay County with Garfield

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[1] Oklahoma Population Estimates, Oklahoma Employment Security Commission, February, 1970.

[2] U. S. Census of Population 1960, Oklahoma PC(1)-38A

County also adding a sizable portion. Refining, nonelectrical machinery, rubber and plastics, plus printing and publishing are sizable manufacturing industries in this area.

Occupational Demand

Several types of occupations should be in significant demand in the North-Central Region during the coming year. Need for additional sales clerks, commodities salesperson and routemen is expected to be notable as is demand for most health, office, and trade and industrial jobs. In these areas, some of the occupations which should offer significant opportunities include nurse aide, licensed practical nurse, general duty nurse, secretary, general office clerk, cook, production machine-tool operator and welder.

Conditions in the North-Central Region appear favorable at the present time. New industry is moving into the eleven-county area and many existing firms are expanding. Rich in human and natural resources and with previous steady economic expansion, the region should continue to experience significant population and employment growth.

East-Central Region

The East-Central Oklahoma Region is comprised of five counties, Hughes, Lincoln, Okfuskee, Pottawatomie and Seminole. This area occupies approximately 3,800 square miles located directly east of Oklahoma City. The population of the region was estimated to total 113,700 for July 1969. This figure was a decrease of 1,485, or 1.3 percent from the 1960 census. The largest county, Pottawatomie, accounted for almost 40 percent of the region's inhabitants.

TABLE XIX

POPULATION AND COMPOSITION OF LABOR FORCE

Item	Numbers
Population, July 1, 1969[1/]	113,700
Population, April 1, 1960[2/]	115,185
Total Labor Force, June 1969	33,320
Unemployment	1,825
Unemployment Rate	5.5
Employment	31,495
Agriculture	6,870
Nonagriculture	24,625
Domestic Service, Self-employed and Unpaid Family Workers	4,210
Wage and Salary	20,415

The total civilain labor force for the East-Central Region numbered 33,320 for June, 1969. This figure revealed some 1,825 persons unemployed and about 20 percent in agricultural jobs. On the other hand, more than 20,400 jobholders held nonfarm wage and salary jobs in the five counties.

Most of the workers in the wage and salary ranks were employed in area trade and service firms, government facilities and manufacturing plants. A majority of the jobholders located in these four categories worked in Pottawatomie and Seminole Counties.

Occupational Demand

Many occupations in the East-Central Region should require additional

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[1/] Oklahoma Population Estimates, Oklahoma Employment Security Commission, February, 1970.

[2/] U. S. Census of Population 1960, Oklahoma PC(1)-38.

personnel in the near future. Some of the positions that will need workers are salesperson, nurse aide, cook, meat cutter, machine setup operator, production machine tool operator, and electronics assembler. Collectively, there will also be demand for office workers.

The East-Central Region should enjoy steady economic growth in the coming years. Its past economy has been based largely on oil and agriculture. Historically, many inhabitants have commuted to the Oklahoma City area for work. In recent years, however, the region has experienced some diversification in industry. Continuation of new industries and expansion in existing facilities should provide a sizable number of new job opportunities.

Northeast Region

The Northeast Region of Oklahoma, encompassing more than 4,300 square miles, is bordered by the state of Kansas to the north and the states of Missouri and Arkansas to the east. Total population of the seven-county region was estimated to be 166,000 for July 1969, a growth of 14,316, or 9.4 percent over the 1960 census. The largest county, Washington, accounted for about one-fourth of the regional count.

TABLE XX

POPULATION AND COMPOSITION OF LABOR FORCE

Item	Numbers
Population, July 1, 1969[1]	166,000
Population, April 1, 1960[2]	151,684
Total Labor Force, June 1969	55,755
Unemployment	2,505
Unemployment Rate	4.5
Employment	53,250
Agriculture	9,345
Nonagriculture	43,905
Domestic Service, Self-employed and Unpaid Family Workers	5,380
Wage and Salary	38,525

The total civilian labor force for the Northeast Region numbered 55,755 for June 1969. Of that figure, some 2,505, or 4.5 percent, were unemployed. About 18 percent of the employed worked in agriculture and more than 70 percent were nonfarm wage and salary jobholders.

In the wage and salary ranks, mining, manufacturing, government and trade accounted for the bulk of employment. A large share of the mining employment was located in Washington County, while substantial numbers of factory workers were counted in Ottawa, Washington and Mayes Counties.

Occupational Demand

Demand for many occupations in the Northeast Region should be

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1/ Oklahoma Population Estimates, Oklahoma Employment Security Commission, February, 1970.

2/ U. S. Census of Population 1960, Oklahoma PC(1)-38A.

significant in the near future. The need for salespersons, health workers, office employees and some trade and industrial personnel is expected to be notable. To be more specific, sales clerk, nurse aide, general duty nurse, sewing machine operator, keypunch operator, secretary, general office and accounting clerk, cook, metal fabricator and welder, all are expected to be in significant demand.

The Northeast Region has great potential. The vast lakes, miles of super-highways, and industrial facilities built in the past may lay the groundwork for future expansion. Employment opportunities should continue to grow as new and existing industries change the region's economic base.

Mid-Eastern Region

The Mid-Eastern Region is an eight-county area containing more than 5,400 square miles of land. Counties included in the region are Adair, Cherokee, Haskell, McIntosh, Muskogee, Okmulgee, Sequoyah and Wagoner. Population of the region was estimated to number 199,000 for July 1969, an increase of 14,149, or 7.7 percent over the 1960 census. Muskogee County accounted for more than 30 percent of the region total, while the city of Muskogee is the area's largest community.

TABLE XXI

POPULATION AND COMPOSITION OF LABOR FORCE

Item	Numbers
Population, July 1, 1969[1/]	199,000
Population, April 1, 1960[2/]	184,851
Total Labor Force, June 1969	59,995
Unemployment	5,395
Unemployment Rate	9.0
Employment	54,600
Agriculture	12,075
Nonagriculture	42,525
Domestic Service, Self-employed and Unpaid Family Workers	5,800
Wage and Salary	36,725

For June 1969, the civilian labor force of the Mid-Eastern Region numbered almost 60,000. Some nine percent of that total were listed as unemployed. Agricultural jobs accounted for about 22 percent of total employment, while the nonfarm wage and salary category counted more than two-thirds of all employment.

Many regional wage and salary jobs are located in the government sector; however, trade, manufacturing, and service also utilize many wage and salary workers. Within manufacturing, industries such as food processing, and stone, clay and glass are of particular importance to the area employment wise. Muskogee and Okmulgee, the two largest counties in the region, account for almost two-thirds of all wage and salary jobs in the Mid-Eastern Region.

1/ Oklahoma Population Estimates, Oklahoma Employment Security Commission, February, 1970.

2/ U. S. Census of Population 1960, Oklahoma PC(1)-38A.

Occupational Demand

Many of the surveyed occupations in this region reflect an over-supply of workers. In some instances, this is caused by the size of the "Other" column. The Mid-Eastern Region has historically been plagued with high rates of unemployment. Those persons who have registered at the State Employment Services offices in the region and who have reported a skill have been listed. Some of the registrants are probably not fully qualified in the occupation given. Others would not meet some employer's requirements for various reasons. For example, due to the size of the supply, employers have a greater degree of selectivity than in most other localities. Therefore, probably a smaller number than that shown would actually be able to gain employment in the occupation sho[illegible]

Another possible cause of job over-supply is that some training done in this region is at least statewide in scope. In other words some of the persons listed as full-time public supply will most likely leave the region or state to gain employment.

With the completion of the Arkansas River Navigation Project almost being a reality, much optimism is held for industrial development of the Mid-Eastern Region. With the development of Muskogee as a port city, the counties should receive an additional boost from new industry and expansion of those firms already located in the region.

Southwest Region

Eight counties comprise the Southwest Oklahoma Region, namely, Beckham, Custer, Greer, Harmon, Jackson, Kowa, Roger Mills and Washita. The area is bounded on the south and west by Texas and on the north by the South Canadian River and encompasses more than 7,000 square miles. Total population for the eight counties was estimated to number 117,200 for July 1969, a decrease of

4,123, or 3.4 percent from the 1960 enumeration. The three largest counties, Jackson, Custer and Washita, accounted for more than 60 percent of the region's inhabitants.

TABLE XXII
POPULATION AND COMPOSITION OF LABOR FORCE

Item	Numbers
Population, July 1, 1969[1]	117,200
Population, April 1, 1960[2]	121,323
Total Labor Force, June 1969	42,720
Unemployment	1,890
Unemployment Rate	4.4
Employment	40,830
Agriculture	13,080
Nonagriculture	27,750
Domestic Service, Self-employed and Unpaid Family Workers	5,100
Wage and Salary	22,650

The Southwest Region's civilian labor force numbered 42,720 during June 1969, including 1,890 or 4.4 percent counted as unemployed. Nearly one-third of the 40,830 total employed were in agriculture. Slightly more than 55 percent were counted on nonfarm wage and salary payrolls.

Among the nonfarm wage and salary divisions, government and trade accounted for a majority of employment. Service establishments added a smaller but notable share. Manufacturing employment, although somewhat smaller than the above mentioned divisions, expanded rapidly during the past

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1/ Oklahoma Population Estimates, Oklahoma Employment Security Commission, February, 1970.

2/ U. S. Census of Population 1960, Oklahoma PC(1)-38A few years. At the time of this study, Custer and Jackson Counties accounted for more than half of all nonfarm wage and salary jobholders in the region. Two major military air installations are located in this region. Two major military air installations are located in this region, one of which has recently been phased out. This base provides a readily available factory site for new industries. Various goods are currently being produced in the region, such as furniture, apparel products, stone-clay-glass, and printing and publishing products, to name a few.

Occupational Demand

Many surveyed jobs reflect little or no regional demand for additional workers while some others show over-supply. As noted earlier, manufacturing job opportunities are more limited than in most of the state. The region's agriculture-oriented economy tends to decrease demand for many of these surveyed jobs. However, some occupations, such as those in health and home economics, should reflect significant needs for additional workers.

The economic picture of this region is moving from one of agriculture to a more job-producing industrial economy. Several counties have already made notable progress in this direction. With available resources and continued effort on the part of regional inhabitants, the Southwest Region should experience steady economic expansion.

Southwest-Central Region

The Southwest-Central Oklahoma Region is composed of Caddo, Commanche, Cotton, Grady, Jefferson, Stephens and Tillman Counties. This area contains more than 6,300 square miles lying south-southwest of Oklahoma City. The population of the region was estimated to total 232,200 for July 1969, a growth of 14,319, or 6.6 percent from the 1960 enumeration. Comanche

County accounted for almost half of the region's inhabitants. After adding totals for Stephens, Grady and Caddo Counties to the Comanche figure nearly 90 percent of the region's population has been counted.

TABLE XXIII

POPULATION AND COMPOSITION OF LABOR FORCE

Item	Numbers
Population, July 1, 1969[1]	232,200
Population, April 1, 1960[2]	217,881
Total Labor Force, June 1969	69,595
Unemployment	3,365
Unemployment Rate	4.8
Employment	66,230
Agriculture	11,180
Nonagriclture	55,050
Domestic Service, Self-employed and Unpaid Family Workers	8,130
Wage and Salary	46,920

For June 1969, the civilian labor force of the region numbered 69,595. That figure included 3,365 unemployed, or 4.8 percent of the total. Nearly 17 percent of the 66,230 employed were working in agriculture while slightly more than 70 percent held nonfarm wage and salary jobs.

Government, trade and manufacturing provided more than two-thirds of nonfarm wage and salary employment for June 1969. Comanche and Stephens Counties accounted for about two out of every three wage ad salary workers in the region at that time. Major industries in the area include a large

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1/ Oklahoma Population Estimates, Oklahoma Employment Security

2/ U. S. Census of Population 1960, Oklahoma PC(1)-3A.

military installation, garment plants, nonelectrical machinery and transportation equipment factories to name a few. The latter mentioned group consists of manufacturers of horse trailers, mobile homes and aircraft parts.

Occupational Demand

Many of the jobs surveyed for the Southwest-Central Region reflect anticipated over-supply of workers. In reality, more net demand may exist than shown. Some persons listed as supply in the "other" column probably could not gain employment in the occupation shown. Also, some persons counted as full-time public supply may choose to take employment outside the scope of this study. Therefore, most likely, more positive demand will exist than actually indicated by the study.

Viewed as a whole, the outlook for the Southwest-Central Region is optimistic. Rich in natural resources and with a citizenry which has demonstrated its willingness to work for economic progress, there is little reason to doubt that population and industrial growth will continue.

South-Central Region

The South-Central Region is a 4,833 square mile portion of Oklahoma composed of Carter, Garvin, Johnston, Love, Marshall, McClain, Murray and Pontotoc Counties. This region is bounded on the south by Texas and on the north by the South Canadian River. Total population of the eight counties was estimated to number 136,800 for July 1969, a decrease of 3,627, or 2.6 percent from the 1960 census. Three counties, Carter, Pontotoc and Garvin, accounted for nearly two-thirds of the region's inhabitants.

TABLE XXIV

POPULATION AND COMPOSITION OF LABOR FORCE

Item	Numbers
Population, July 1, 1969[1]	136,800
Population, April 1, 1960[2]	140,427
Total Labor Force, June 1969	48,090
Unemployment	2,340
Unemployment Rate	4.9
Employment	45,750
Agriculture	8,050
Nonagriculture	37,700
Domestic Service, Self-employed and Unpaid Family Workers	6,260
Wage and Salary	31,440

The civilian labor force of the region numbered 48,090 for June 1969. Some 4.9 percent of that total were unemployed. Of the 45,750 jobs, about 18 percent were in agriculture while more than two-thirds held non-farm wage and salary work.

Government provides the most positions in the region's wage and salary sector; however, trade, manufacturing, service, and mining firms also employ sizable numbers of workers. Carter, Pontotoc, and Garvin Counties account for about three-fourths of the South-Central Region's wage and salary employment total. Important manufacturing activities include metal processing, refining, textiles, apparel, electronic components, and stone-clay-glass. In the near future, the manufacturing division should be significantly enlarged by the establishment of several new plants, one of which will be a major producer of tires.

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[1] Oklahoma Population Estimates, Oklahoma Employment Security Commission, February 1970.

[2] U. S. Census of Population 1960, Oklahoma PC(1)-38A.

Occupational Demand

Many of the survey jobs reflected need for additional workers in this region. Some of the more significant include most sales occupations, nurse aide, sewing machine operator, a majority of clerical jobs, cook and heavy equipment operator.

In facing the problem of transition from an agriculturally-based economy to more job-producing nonfarm industry, many of the counties have been active in promoting the area as ideal for industrial expansion. With considerable progress being made in establishing additional industry, the outlook for the South-Central Region is favorable. This additional industrialization, coupled with the existent economic structure, should provide the region with a solid basis for future population and employment growth.

Southeast Region

The Southeast Region of Oklahoma is composed of nine contiguous counties, bounded by Arkansas and on the east and Texas to the south. The area encompasses more than ten thousand square miles. Estimated July 1969 population for the region totaled 169,900, up 7,970, or 49 percent from the region's inhabitants, and when combined with LeFlore and McCurtain Counties, about 60 percent of the population is counted.

TABLE XXV

POPULATION AND COMPOSITION OF LABOR FORCE

Item	Numbers
Population, July 1, 1969[1]	169,900
Population, April 1, 1960[2]	161,930
Total Labor Force, June 1969	51,105
Unemployment	3,075
Unemployment Rate	6.0
Employment	48,030
Agriculture	10,740
Nonagriculture	37,290
Domestic Service, Self-employed and Unpaid Family	5,190
Wage and Salary	32,500

The civilian labor force of the Southeast Region numbered more than 51,000 during June 1969, including 3,075, or 6.0 percent shown as unemployed. Of the slightly more than 48,000 employed, approximately 22 percent were in the agricultural sector and more than two-thirds held wage and salary jobs.

Government is by far the region's largest wage and salary division, employment-wise, with many of these workers in Pittsburg, Bryan, LeFlore and McCurtain Counties. Trade firms and manufacturing plants also provide many area jobs. Pittsburg County has a sizable portion of the workers in both these categories, while Bryan County provides many additional trade positions and a substantial number of factory jobs are also located in McCurtain

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[1] Oklahoma Population Estimates, Oklahoma Employment Security Commission, February 1970.

[2] U. S. Census of Population 1960, Oklahoma PC(1)-38A.

County. Important Southeast Region industries include apparel manufacturing, aircraft parts and electronics assembly, munitions production and the manufacture of lumber and wood products.

Occupational Demand

Demand for additional workers in the Southeast Region appears to be limited to only a few occupations. In some cases, however, the demand may be larger than stated primarily because of the reasons stated in Item 3 of the Analysis of Manpower Supply and Demand Data. Needs for additional jobholders should be significant in most health occupations, some office jobs, cook, all-round machinist and, most likely, welding, to name a few.

PART II

AN ANALYSIS OF FOLLOW-UP DATA

This part deals with (1) follow-up data on public schools, (2) follow-up data on private schools, and (3) a discussion of the validity of the follow-up data.

Public Schools

The 13,775 former students from public school occupational programs who had reported (OTIS II, 1968) that they would graduate in May 1969 were followed up during the Fall of 1969. Mailed questionnaires were used and the non-respondents were reminded twice at one month intervals. Usuable responses were 34.5 percent of the total mail-out, Table XXVI shows the results of these returns.

TABLE XXVI

RESULTS OF FOLLOW-UP DATA FROM PUBLIC SCHOOLS

Responses	Number	Percent
Usuable	4,758	34.5
Not Usable	869	6.3
Other (Did not respond)	8,148	59.2
Total	13,775	100.0

A random sample of one hundred from the non-respondens was drawn and contact was established with 93 of them. Seven students culd not be traced. A simple chi square test showed that there was no significicnt difference between the earlier responses and the distribution of this smple on important variables.

Referring back to the usable responses of the follow-up questionnaire 73.5 reported that they graduated from the programs they were enrolled. Full results can be seen in Table XXVII.

TABLE XXVII

Responses to Question Whether the Student Graduated

No.	Possible Responses	Returns	
		Number	Percent
1	Graduated	3498	73.5
2	Did Not Graduate	761	16.0
3	No Response	499	10.5
	Total	4758	100.0

Subsequent behavior in terms of employment of the graduates can be seen in Table V, Chapter II while Table XXVIII on the following page provides the similar data about those students who did not graduate.

Of those who did not complete their programs, 42 percent continued their schooling (29 percent continued in the same field). It was found that the non-graduates were less likely to get jobs in the field related to their training as compared to the graduates (seven percent versus twenty percent). On the other hand, they (non-graduates) were more likely to be placed in jobs not related to their training (fifteen percent versus seven percent) and receive an average beginning salary of $300 less per year than those who completed their training programs.

Figure 9 shows a comparison of median starting salary of graduates with that of non-graduates. Analysis of the data indicates that the more

TABLE XXVIII

SUBSEQUENT BEHAVIOR PATTERNS OF NON-GRADUATES FROM PUBLIC SCHOOL PROGRAMS

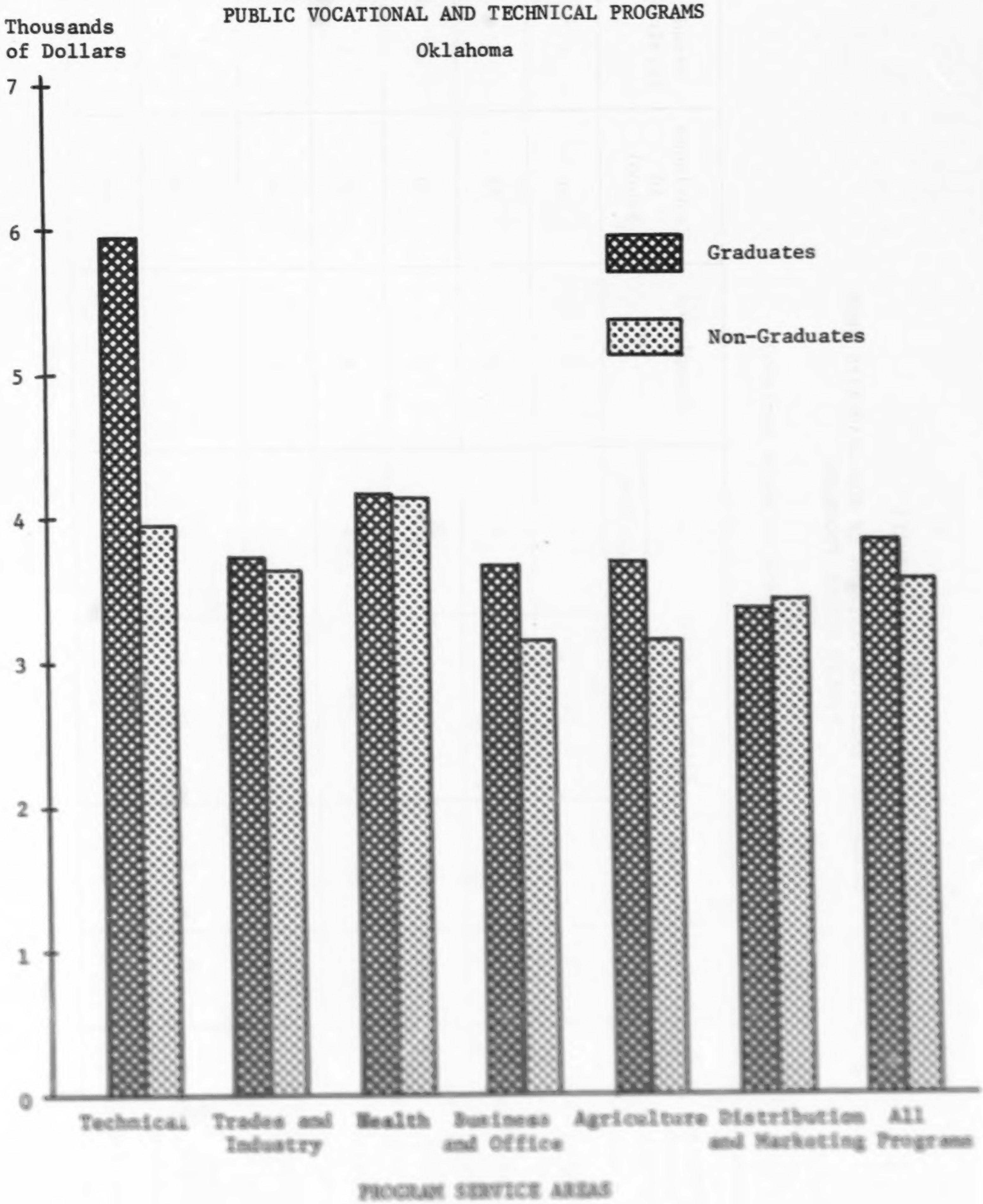
(All percentages rounded to whole percent)

Program Service Division	Total	Placed on Jobs			Unemployed	Continued in School	Armed Services	Other
		Related	Non-Related	Part-Time				
Voca. Agri.	100	2	24	5	9	46	6	8
Dist. Educ.	100	6	18	6	12	38	6	14
Health	100	15	4	2	9	38	-	32
Office	100	20	5	3	8	36	3	25
Technical	100	10	23	1	5	46	7	8
Trade and Industrial	100	7	16	2	12	38	16	9
All Programs	100	7	15	3	11	42	6	16

Figure 9

COMPARATIVE MEDIAN YEARLY SALARY
OF GRADUATES AND NON-GRADUATES FROM
PUBLIC VOCATIONAL AND TECHNICAL PROGRAMS

Oklahoma



technical the nature of the job for which trained, greater differences could be expected between the starting salaries of the graduates and non-graduates. The biggest difference in starting salaries was found in Technical Education ($2,000); other differences were Office ($521), Agriculture ($521), Trade and Industrial ($89), and Health education ($23). Distributive Education was the only program service division which showed that non-graduates start at a higher salary than the graduates ($33).

A word of caution on starting salary would be appropriate here. Due to the nature and the distribution of the data, the Median statistic was used in order to arraive at the figure of starting salary in each field. The figures stated above and the subsequent analyses in this section, there fore, should be considered as indicative of trend rather than absolute values.

A comparison of graduates placed in related fields versus those in the non-related fields (Figure 10) indicated that those placed in the field they were trained were likely to get better starting salaries than those placed in non-related fields. The average difference was $478. When analyzed by program service divisions the average difference ranged from approximately $1,200 in Technical Education to as little as $62 in Vocational Agriculture. An exception, again, was Distributive Education where an average starting salary obtained by a graduate placed in related field was less than that of the graduate placed in non-related field. The difference could not be assessed in the case of Health Education because the average starting salary of those placed in non-related fields was found to be less than $3,000.

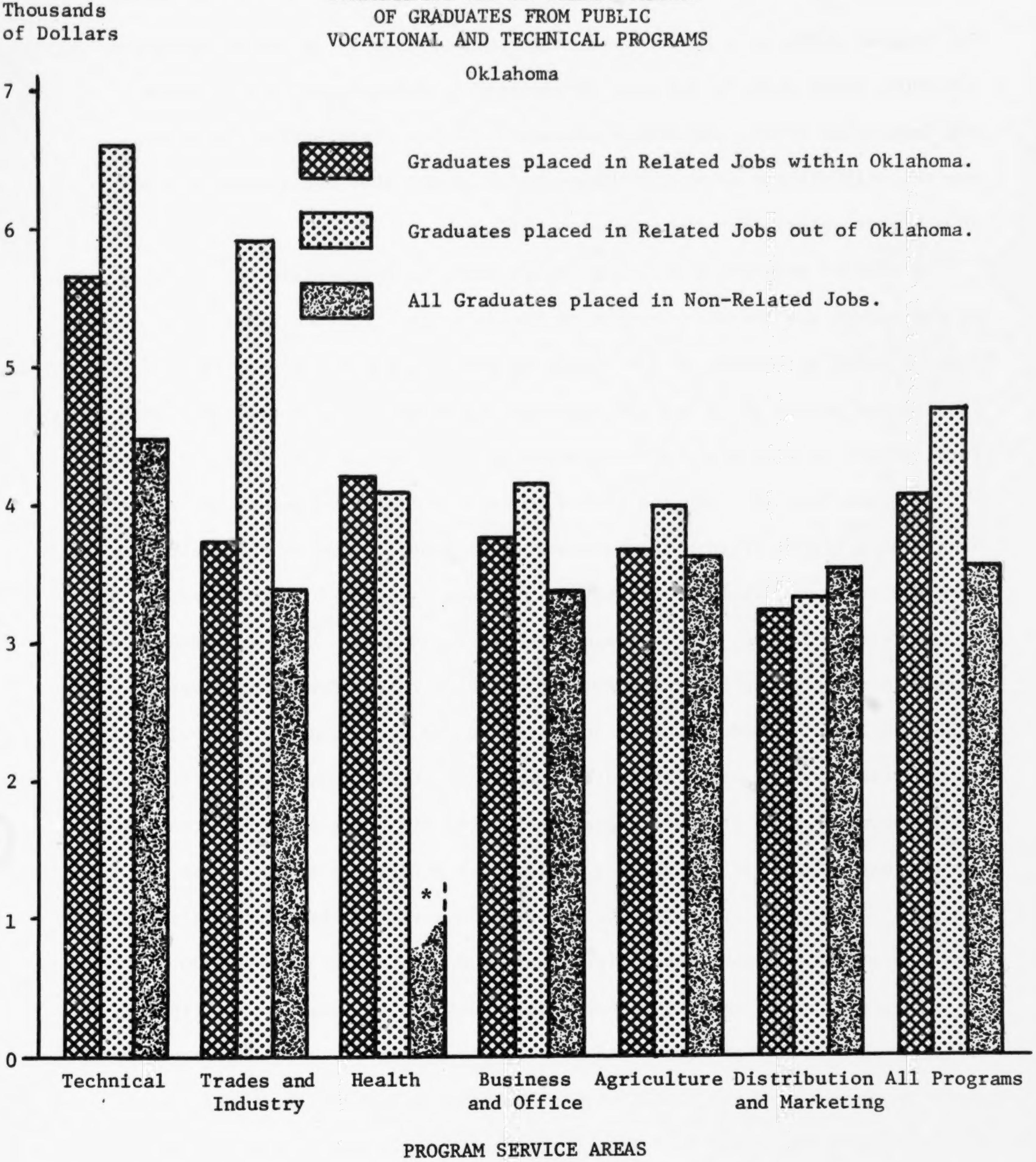
Figure 10 shows another interesting aspect of the salary-range figures of the graduates. This aspect refers to a comparison of the salaries of those graduates who were placed within Oklahoma in jobs in the field, or related fields for which they were trained with those who were placed in similar jobs outside Oklahoma. With the exception of Health Education,

M

Figure 10

COMPARATIVE MEDIAN YEARLY SALARY
OF GRADUATES FROM PUBLIC
VOCATIONAL AND TECHNICAL PROGRAMS

Oklahoma



* Less than $3,000.

those who out-migrated started with better salaries than those who were placed on related jobs in Oklahoma. This difference ranged from $2,184 in Trade and Industrial Education to $112 in Distributive Education. Health Education graduates who took jobs in the state started, on an average, at higher salaries than those who out-migrated. This, in part, might explain the high placement rate and the lowest out-migration rate for Health Education programs.

Home Economics (Useful), graduates and non-graduates, were not included in this analysis as their stated career objective did not relate directly to the labor market. In recent years efforts have been made to expand Home Economics training programs, like child care, which lead directly to specific jobs. This section of Home Economics is generally referred to as Home Economics (Gainful).

The returns from Home Economics (Gainful) were not found to be sufficient for meaningful analysis. However, Table XXIX shows a frequency count of the available returns.

TABLE XXIX

TOTAL NUMBER OF RETURNS
HOME ECONOMICS (GAINFUL)

Breakdown of Returns		Median Salary of Those Employed
Total Number of Returns	42	Less than $3,000
Number did not complete	5	
Number completed	35	
Placed in related field	7	Less than $3,000
Placed in non-related field	7	Less than $3,000
Placed in part-time work	1	
Continuing School	9	
Unemployed	7	
Others	4	
No Response to question	2	
Number out-migrated	3	Less than $3,000

A second follow-up was conducted in the fall of 1969 in Oklahoma by The Oklahoma Research Coordinating Unit using teachers as the source of information. This follow-up was compared on the question of subsequent job-related activity of graduates with the follow-up conducted by the OTIS staff. The comparison data can be seen in Table XXX.

A detailed examination of the comparison data indicated the following relevant points.

1. In broad areas which were not subject to interpretation such as "working full-time", "continuing school", in "armed forces", and "unemployed", the teachers and the students tended to be consistant in their responses.
2. There was disagreement between teachers and students as to the definition of full-time employment "in field for which trained", "in related field" and "in non-related field". Teachers tended to classify employment of graduates as "in related field" when students themselves classified similar type of employment as "in non-related field".
3. Teachers tended to report students "in school" at a higher rate than the corresponding responses directly from the students. However, the teachers tended to report the students in programs unrelated to previous occupational training more frequently than students would.
4. Teachers and students tended to disagree on the question whether the students were "employed part-time", "unemployed seeking employment" or "unemployed not seeking employment". Generally, teachers grouped these three categories together as "unemployed not seeking employment" whereas the students disagreed with this assessment and tended to report separately for each category.

TABLE XXX

COMPARATIVE DATA ON THE TWO FOLLOW-UP METHODS RELATIVE TO REPORTED STUDENT JOB STATUS

	Student Responses	Student Responses Adjusted*	Teacher Responses on Students
Working Full-time in Occupation for Which Trained	546	2386	1706
Working Full-time in Occupation Related to Training Received	301	774	1148
Working Full-time in Occupation Not Related to Training Received	449	1753	959
Continuing Full-time in School in Field Related to Training	653	3862	3183
Continuing Full-time in School in Field Not Related to Training	596	1530	3289
In Armed Services	135	1211	707
Employed Part-time but Not Attending School	256	557	146
Unemployed, Seeking Employment	324	1218	195
Unemployed, Not Seeking Employment	182	784	1102

*Adjustments based on sample of non-returnees.

In summary, the differences in the two sets of follow-up data could be traced to the following reasons, among others:

a. Teachers and students tend to interpret some of the terms differently. Some of the terms were not defined very clearly and thus, lent themselves to different interpretations.

b. The responses from the teachers were forced whereas those from the sutdents were entirely voluntary.

c. The questionnaires used for the two follow-up studies were designed to measure different vaiables. (See the two questionnaires in Figures D-2 and D-6.) There is only a partial congruence on the question which seeks job-related information about the present status of the student.

From the available data it is difficult to assess the comparative suitability of either system of follow-up data collection. Further study in both is indicated before a final decision can be made.

Private Schools

Out of a total 1,264 usuable returns from private school students, 75 percent reported that they completed the program and 21 percent reported that they did not complete the program. The remaining four percent did not respond to this question.

Seventy-three percent of the students from private schools were placed on jobs out of which 52 percent were placed on the job in the field, or related field for which they were trained. Only six percent of the students from private schools continued their education beyond the training period at graduation. Table XXXI shows details about job-related behavior of graduates from the private schools.

Twenty-four percent of the students from private schools reported that

TABLE XXXI

JOB-RELATED SUBSEQUENT BEHAVIOR OF STUDENTS FROM PRIVATE SCHOOLS

S. No.	Possible Responses	Private Schools	
		Number	Percent
1	Working full-time in occupation for which trained	445	35.21
2.	Working full-time in occupation related to the field of training	208	16.46
3.	Working full-time in occupation not related to the training	269	21.28
4.	Continuing full-time in school in the field related to training	45	3.56
5.	Continuing full-time in school in non-related field	32	2.53
6.	Armed Services	54	4.27
7.	Employed part-time, but not attending school	26	2.06
8.	Unemployed, seeking employment	111	8.78
9.	Unemployed, not seeking employment	55	4.35
10.	No Response	19	1.50
	Total	2164	100.00

they were placed at a salary of more than $7,000 per year; about twenty percent reported an annual starting salary of less than four thousand. An interesting comparison between starting salaries of graduates from public and private schools emerged from data analyzed. This comparison can be seen in Figure 11. Median salary of students from private schools tended to be higher than that of students from public schools. This differential is pronounced in technical education where pilot training is one of the major fields of training in private schools. The students in aviation, especially in commercial flying, are generally placed at a better salary than in other technical fields.

More students from private schools, on the other hand, tend to leave Oklahoma for employment outside the state. This percentage of 19.6 compares at 5.2 percent with public school students. It should be noted that private school technical education graduates, particularly aviation, contribute substantially to this out-migration percentage. Another factor responsible for this big differential could be that private schools train a large number of adults while a large percent of public school graduates are less than 19 years of age. This factor could contribute greatly to the beginning salary received.

Summary

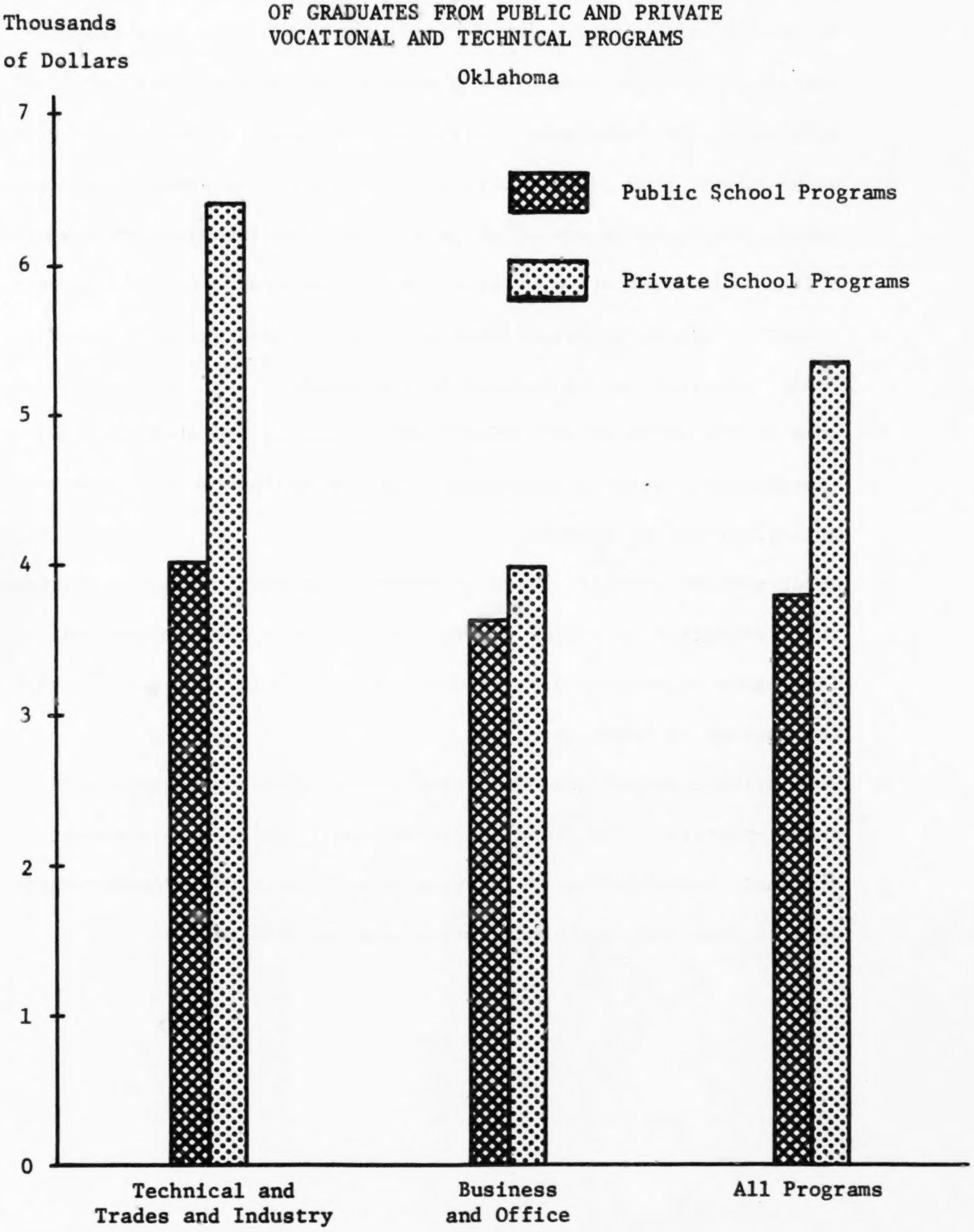
Before any final conclusions are drawn from this analysis of data, a longitudinal study of job-related graduate behavior (both of the same students for a number of years as well as the new graduating classes every year) will be necessary. Till then the results of this follow-up study should be used as indicating trend only. The following observations may, therefore, be considered as preliminary findings.

1. About 25 percent young men and women drop out of the training programs in their final year (in certain cases the program itself may be of one year's duration). There is a need of intensive follow-up of these students so as to improve the rate of graduation.

Figure 11

COMPARATIVE MEDIAN YEARLY SALARY
OF GRADUATES FROM PUBLIC AND PRIVATE
VOCATIONAL AND TECHNICAL PROGRAMS

Oklahoma



2. Only 28 percent graduates from public schools find employment in the field (or in a related field) for which they were trained whereas 16 percent are either placed in non-related field or find only part-time employment. Still another nine percent of the graduates do not find jobs at all, so that these 25 percent of the graduates, the training was of no help in getting immediate employment. A line of communication between the trained graduates and the employers needs to be established so that this wastage of trained human resources can be reduced to a minimum.
3. Some of the terms on the questionnaire such as "related job" and "unemployment seeking employment" must be defined so that their interpretation is uniform.
4. About sixteen percent of the graduates from public schools continue their education in fields not related to their earlier training. This again represents an area where means should be found to avoid the wastage of human resources.
5. More private school graduates than public school graduates tend to out-migrate. The trend can be reversed, to a certain extent at least, by providing the private schools with the manpower-needs data so that they can place more graduates in Oklahoma.

PART III

AN ANALYSIS OF MANPOWER SUPPLY AND DEMAND -- WITH IMPLICATIONS FOR OKLAHOMA'S FULL-TIME PUBLIC AND PRIVATE TRAINING PROGRAM MIX

The supply of trained manpower available to satisfy Oklahoma's Manpower demand has many sources. The OTIS study considered the following six the most important.

(1) Full-time public vocational and technical training,

(2) Adult public vocational and technical training,

(3) Manpower Development and Training Act programs (MDTA),

(4) Full-time private school training programs,

(5) Industrial on-job-training, and

(6) Registrants at the Oklahoma Employment Security Commission Offices.

For the analysis presented here, only full-time programs (offered both in public and private schools) were considered due to both the availability of data and relevance to the overall purpose of OTIS. Presented below are (1) a rank ordering of programs by net manpower needs, (2) a description of the procedures used to calculate analysis parameters, (3) an exemplary analysis of full-time public school training and (4) an exemplary analysis of full-time private school programs.

A Rank Ordering of Program Clusters and Potential Program Clusters by Demand Minus Supply

A summary table of interfacing (See Chapter II and Appendix I) is presented in Table XXXII. This table rank orders the program clusters by net statewide demand. It should be noted that the total of net demand by regions may not equal the statewide demand figures due to legal limitations placed on the demand reporting procedures of the Oklahoma Employment Security Commission as related to the disclosure of an individual firm's staffing needs.

TABLE XXXII

A RANK ORDERING OF PROGRAM CLUSTERS AND POTENTIAL PROGRAM CLUSTERS BY DEMAND MINUS SUPPLY

RANK	PROGRAM CLUSTER	MANPOWER DEMAND MINUS MANPOWER SUPPLY											
		Statewide	REGIONAL										
			Oklahoma City SMSA	Tulsa SMSA	Northwest Region	North-Central Region	Northeast Region	East-Central Region	Mid-East Region	Southwest Region	Southwest-Central Region	South-Central Region	Southeast Region
1	140702 Secretary 140703 Stenographer 140303 General Office Clerk 140000 Cooperative Office Education	2701	1736	866	45	309	(22)	(24)	(299)	(25)	(232)	56	(31)
2	041700 Real Estate 040000 Distributive Education 010400 Agriculture Products 010200 Agriculture Supplies and Services	1829	554	595	50	360	47	28	68	21	(51)	56	(16)
3	070203 Nurse Aide	542	127	(18)	16	64	39	28	17	51	69	41	74
4	172902 Cook/Chef	468	61	57	24	72	40	17	(18)	14	62	50	60
5	* Assembler, Product (706.884)	456	306	78	-	17	11	(9)	9	2	9	19	(1)
6	172303 Machine Tool Operator 172302 Machine Shop	426	33	346	2	41	(17)	9	(50)	3	5	(7)	27
7	070301 Nurse, Associate Degree**	416	159	89	13	59	36	11	5	16	(12)	16	15
8	*Mechanic, Aircraft Accessories (621.281) *Assembler, Aircraft Structures (621.281) *Assembler, Aircraft Subassembly (621.281)	349	160	169	-	-	-	-	-	-	-	-	(4)
9	172305 Sheet Metal	332	58	215	1	13	28	8	-	-	6	7	(9)

* No program presently offered

** Does not include 3 year diploma programs or 4 year baccalaureate programs.

TABLE XXXII (CONTINUED)

RANK	PROGRAM CLUSTER	MANPOWER DEMAND MINUS MANPOWER SUPPLY												
			REGIONAL											
		Statewide	Oklahoma City SMSA	Tulsa SMSA	Northwest Region	North-Central Region	Northeast Region	East-Central Region	Mid-East Region	Southwest Region	Southwest-Central Region	South-Central Region	Southeast Region
10	170401 Electrician	297	114	114	8	22	17	5	-	4	(3)	20	(7)
11	090202 Clothing Management Production and Services	269	(30)	(39)	(7)	(3)	32	(91)	(47)	100	74	93	(6)
12	*Post Office Clerk (232.368)	225	41	34	20	44	6	7	15	9	9	10	21
13	*Telephone Operator (235.862)	224	109	24	9	37	10	2	(4)	6	17	12	2
14	*Housekeeper (321.138)	209	43	26	7	25	27	9	12	12	17	13	12
15	140202 Keypunch Operators and Peripheral Equipment Operators (Unit Record)	193	13	69	-	12	179	(10)	(34)	(4)	(34)	(13)	(2)
16	*Maintenance Man (Bldg.) (899.381)	193	56	45	6	20	11	9	2	7	10	9	8
17	*Waitress or Waiter (311.878)	178	36	69	(11)	77	(25)	(38)	(15)	(24)	12	39	30
18	140101 Accountant	169	81	16	2	13	20	2	5	6	7	3	3
19	*Mail Carrier (233.388)	159	16	57	15	16	4	2	12	8	3	5	9
20	010500 Horticulture	151	53	50	1	1	7	-	9	13	2	5	2
21	172802 Law Enforcement Training	135	38	35	4	17	7	5	7	4	8	3	4
22	172903 Meat Cutter	128	50	51	(5)	-	4	16	8	2	(3)	(6)	(3)
23	160106 Civil Technology	116	75	15	5	-	-	-	3	3	5	4	2
24	171003 Heavy Equipment Operator	97	58	16	6	29	(4)	7	(31)	9	9	22	(33)
25	070302 Practical Nursing	83	(9)	(32)	1	30	8	5	33	3	22	7	6
26	160111 Industrial Technology	80	33	27	-	1	3	2	2	3	1	2	3

*No program presently offered.

TABLE XXXII (CONTINUED)

RANK	PROGRAM CLUSTER	MANPOWER DEMAND MINUS MANPOWER SUPPLY											
			REGIONAL										
		Statewide	Oklahoma City SMSA	Tulsa SMSA	Northwest Region	North-Central Region	Northeast Region	East-Central Region	Mid-East Region	Southwest Region	Southwest-Central Region	South-Central Region	Southeast Region
27	079901 Ward Clerk 079902 Medical Record Clerk	67	(13)	23	2	15	10	1	8	4	6	-	6
28	172801 Fireman Training	67	21	18	2	7	5	4	5	1	-	(3)	5
29	171004 Brick Masonry	62	30	31	5	5	(21)	3	(11)	-	5	10	(9)
30	*Medical Technologist (078.281)	52	21	7	1	4	4	1	3	1	-	2	3
31	*Hostess, Restaurant or Coffee Shop (310.868)	52	16	19	-	5	-	(2)	-	3	9	-	-
32	*Structural Steel Worker (801.781)	44	25	25	1	2	(3)	-	7	(1)	(5)	5	(15)
33	*Maintenance Man (899.281)	42	10	19	1	6	(2)	-	7	2	(4)	2	1
34	173204 Boiler Operations	40	18	12	2	2	2	2	1	1	(2)	(1)	1
35	*Stillman, Petroleum Refining (542.280)	40	-	-	-	34	(2)	-	-	-	3	3	-
36	160105 Chemical Technology	38	-1	9	-	17	18	1	(1)	(1)	(1)	-	(3)
37	070203 Medical Laboratory Assistant	36	7	11	2	3	-	-	2	1	3	2	2
38	170600 Business Machine Repair	25	(2)	26	-	-	-	-	-	-	-	-	-
39	070211 Radiologic Technology (Health)	25	11	(1)	1	3	1	-	2	1	3	1	2
40	170305 Sewing Machine Repairman 170306 Machine Repairman 170307 Maintenance Mechanic 172100 Small Engine Repair 170200 Appliance Repair	24	(21)	55	(2)	8	6	2	(33)	9	8	7	(22)

*Nc program presently offered.

TABLE XXXII (Continued)

RANK	PROGRAM CLUSTER	MANPOWER DEMAND MINUS MANPOWER SUPPLY											
			REGIONAL										
		Statewide	Oklahoma City SMSA	Tulsa SMSA	Northwest Region	North-Central Region	Northeast Region	East-Central Region	Mid-East Region	Southwest Region	Southwest-Central Region	South-Central Region	Southeast Region
41	*Die Setter (Forging) (612.380)	24	-	21	-	-	-	-	-	-	-	-	-
42	160117 Computer Science (Scientific)	22	4	11	-	5	2	-	-	-	-	-	-
43	*Plater (Electroplating) (500.384)	20	5	14	-	-	-	(1)	-	-	1	-	-
44	171007 Heating and Plumbing	19	18	20	3	(1)	(2)	(3)	(3)	(1)	(9)	(5)	(1)
45	*Power Plant Operator (952.782)	14	5	1	1	2	1	1	1	-	1	-	-
46	160197 Technical Writing	13	1	8	-	4	-	-	-	-	-	-	-
47	172901 Baker	10	17	9	(2)	2	2	3	(24)	(1)	2	-	(1)
48	*Plasterer (842.781)	10	4	5	-	-	-	-	-	1	-	-	-
49	*Heat Treater (504.782)	9	-	9	-	1	-	-	-	-	-	-	(1)
50	160602 Fire and Safety Technology	8	1	4	-	1	(1)	-	-	(1)	-	-	(1)
51	*Electrocardiograph or Electroencephalograph Technician (078.368)	8	3	2	-	-	1	-	1	-	(1)	1	-
52	*Caster (514.884)	8	-	3	-	2	-	-	2	-	-	-	-
53	*Grinding Mill Operator (515.782)	7	-	2	-	-	3	-	-	-	-	-	1
54	*Coremaker (Foundry) (518.381)	7	-	4	-	2	-	-	-	-	-	-	-
55	*Bottle Machine Operator, Glass (575.782)	7	-	-	-	-	-	-	6	-	-	-	-
56	*Occupational Therapist Aide (079.368)	6	(1)	2	-	2	4	-	-	-	-	-	-
57	*Pumpman (Petroleum Refining)(549.380)	6	-	3	-	2	-	-	-	-	-	-	-

*No program presently offered.

TABLE XXXII(Continued)

RANK	PROGRAM CLUSTER	MANPOWER DEMAND MINUS MANPOWER SUPPLY											
			REGIONAL										
		Statewide	Oklahoma City SMSA	Tulsa SMSA	Northwest Region	North-Central Region	Northeast Region	East-Central Region	Mid-East Region	Southwest Region	Southwest-Central Region	South-Central Region	Southeast Region
58	*Forging Press Operator (611.782)	5	-	3	1	-	-	-	-	-	-	-	-
59	*Concrete Stone Fabricator (575.781)	4	3	-	-	-	-	-	-	-	-	-	-
60	*Concrete Pipe Making Machine Operator (575.885)	4	3	-	-	-	-	-	-	-	-	-	-
61	*Molder, Foundry (518.381)	3	-	3	-	2	-	2	(3)	-	-	-	(3)
62	170403 Ground Operations	3	2	-	-	-	-	-	-	-	-	-	-
63	*Grinder Operator (Grain and Feed)(521.782)	3	-	-	-	1	1	-	-	-	-	-	-
64	*Batch and Furnace Man, Glass (572.782)	2	-	2	-	-	-	-	(1)	-	-	-	-
65	*Brick and Tile Making Machine Operator (575.782)	2	-	-	-	-	-	-	-	1	-	-	-
66	*Tissue Technologist (078.381)	2	-	1	-	-	-	-	-	-	-	-	-
67	160113 Mechanical Technology	1	8	12	-	(11)	(6)	2	-	-	(1)	-	(4)
68	*Transmitter Operator (957.282)	0	1	(1)	-	-	-	-	-	-	(1)	-	-
69	173601 Millwork and Cabinet Making	(2)	10	2	-	(3)	-	-	(13)	-	1	-	(13)
70	160101 Aeronautical Technology 170401 Aircraft Mechanics	(3)	41	(41)	-	(21)	-	-	-	-	(5)	(2)	-
71	*Radiographer (Industrial) (199.381)	(3)	(3)	(1)	-	-	-	-	-	-	-	-	-
72	160112 Instrumentation Technology	(12)	(21)	7	-	3	-	-	1	-	(3)	-	-

*No program presently offered.

TABLE XXXII (CONTINUED)

RANK	PROGRAM CLUSTER	MANPOWER DEMAND MINUS MANPOWER SUPPLY											
			REGIONAL										
		Statewide	Oklahoma City SMSA	Tulsa SMSA	Northwest Region	North-Central Region	Northeast Region	East-Central Region	Mid-East Region	Southwest Region	Southwest-Central Region	South-Central Region	Southeast Region
73	170900 Commercial Photography	(12)	7	(9)	-	1	-	(1)	(1)	-	(11)	-	-
74	090203 Food Management, Production and Services	(15)	(5)	-	1	(4)	-	-	(3)	1	-	(5)	(1)
75	170101 Airconditioning and Refrigeration	(17)	(19)	24	-	(3)	-	1	-	(6)	(10)	(5)	(2)
76	070305 Surgical Technician	(26)	(29)	6	1	6	-	(1)	1	3	(16)	1	1
77	070904 Medical Assistant	(31)	(15)	(12)	2	(6)	(1)	2	(3)	1	1	2	(3)
78	172306 Welding	(46)	(76)	24	1	46	24	(5)	(67)	(8)	6	(8)	(1)
79	173300 Upholstering	(48)	(14)	-	-	-	-	-	(39)		(3)	-	-
80	171902 Printing Press Occupations	(47)	1	(11)	4	1	7	(1)	(51)	-	(3)	2	2
81	170301 Auto Body	(53)	(14)	32	3	10	(4)	9	(83)	8	(6)	(13)	1
82	160601 Commercial Pilot Training	(79)	(7)	(28)	-	-	-	-	-	-	-	(44)	-
83	171200 Mechanic, Diesel	(103)	14	26	1	6	3	1	(160)	1	1	1	1
84	170700 Commercial Art	(118)	(2)	(11)	-	-	-	(5)	(94)	-	(6)	-	-
85	160108 Electronics (Technical)	(122)	(16)	(8)	-	(10)	(8)	(2)	(63)	(3)	(6)	(1)	(9)
86	171503 Radio and TV Repair 171502 Electronics (Vocational) 171500 Electronics Assembler	(124)	194	18	-	(23)	(5)	21	(46)	-	(23)	(263)	(8)
87	171001 Carpenter	(124)	98	60	2	(10)	(63)	(41)	(88)	(7)	(46)	3	(43)

TABLE XXXII (CONTINUED)

RANK	PROGRAM CLUSTER	MANPOWER DEMAND MINUS MANPWER SUPPLY											
					REGIONAL								
		Statewide	Oklahoma City SMSA	Tulsa SMSA	Northwest Region	North-Central Region	Northeast Region	East-Central Region	Mid-East Region	Southwest Region	Southwest-Central Region	South-Central Region	Southeast Region
88	170304 Farm Engine Repair 010300 Agriculture Mechanics 010100 Production Agriculture	(213)	6	2	20	(13)	33	22	(47)	(7)	(74)	(32)	(123)
89	160103 Architectural Technology 160198 Drafting and Design 171300 Drafting	(258)	(7)	(14)	-	(23)	(29)	(16)	(141)	-	(25)	(4)	(7)
90	160401 Computer Programming (Business)	(278)	(176)	15	-	(6)	(16)	-	(57)	(14)	(14)	(1)	(14)
91	170302 Auto Mechanic	(334)	(62)	34	(8)	(16)	(38)	(9)	(168)	(2)	(17)	(25)	(34)

Procedures Used to Calculate Analysis Parameters

The following section describes in broad detail how the figures appearing in Tables XXXIII and XXXIX were developed.

Net Manpower Requirement Figures

The net manpower requirements were developed in the interfacing (See Appendicies I and I-1).

A sum of the net manpower requirements by service division is shown in Table XXXIII. *These sums may not match the service division sums in the interfacing* because of (1) overlap in the program clusters and (2) the inclusion of estimated demand in jobs for which training programs do not presently exist, i.e. occupations surveyed for which no public or private programs exist.

Percent of Supply Presently Being Provided by the Full-Time Public Sector

The percent of trained manpower supply presently being provided by full-time public training programs was computed using the interfacing tables. The total supply for each service division was summed and then divided into that part of supply coming from full-time public training.

Manpower Requirements to be Supplied by the Full-Time Public Sector

This value was calculated by multiplying the net manpower requirements with the percent of supply presently being provided by the full-time public sector. The full-time public manpower requirements were determined from the percentage presently being contributed to the total adjusted manpower supply in Oklahoma.

Dropout Rates

The following procedure was used to compute dropout rates for the seven service divisions.

1. Data collection on dropout is described below:
    a. In the fall of 1968, 53,292 students in occupational training were identified on OTIS Form 2's. (See Appendix A)
    b. The Research Coordinating Unit followed up 44,758 of these students one year later in the fall of 1969. (See Appendix D)
2. The number of dropouts that occurred in the one-year period was computed for each service division. Dropouts were defined as students who (1) had been identified in the fall of 1968 as enrollees, (2) had been followed-up in the fall of 1969, (3) were not still enrolled in the fall of 1969 and (4) had not graduated.
3. A yearly dropout rate was computed for each service division where the number of dropouts was divided by the number followed-up. A year is defined as the 9 month academic year in all service divisions except health education where 12 months constituted a year.
4. The average length of programs was computed from the Student Characteristics Tape (See Appendix A) for each service division.
5. The overall program service division dropout rate was computed for each service division on yearly dropout rate and length of program using the following formula.

    Overall Dropout Rate =

$$100\left[\left[\sum_{k=1}^{n} Y(1-Y)^{k-1}\right] + (r/9)Y(1-Y)^{n}\right]$$

Where:

Y = yearly dropout rate

n = number of whole nine month periods in average program length

r = average length of program − n

Sample Calculation: In Distributive Education the average yearly dropout rate is .19 and the average program length is 19 months. (In the first 9 months, 19 percent of the students will drop out; in the second 9 months, 19 percent of the remaining students will drop out; and in the remaining month 1/9 of 19 percent of the remaining students will drop out.)

Therefore:

$Y = .19$

$n = 2$

$r = 19 - 2x9 = 1$

and:

$$\text{Overall Dropout Rate} = 100[.19 + .19(1 - .19) + (1/9)(.19)(1 - .19)^2]$$

$$= 100[.19 + .1539 + .0138]$$

$$+\ 35.77 \text{ or } 36 \text{ percent}$$

Availability for Placement

The percent of graduates from occupational training who are available for placement was determined from the two follow-up studies described in Chapter II and documented in Appendix D. Graduates available for placement exclude all those graduates who enter the armed forces, continue in school or are not seeking employment.

Required Adjustment in Annual Enrollment for the Full-Time Public Sector

This value was determined by dividing the manpower requirements to be supplied by the full-time public sector by the graduation rate times the percent of full-time public graduates who are available for employment. The graduation rate was calculated by subtracting the dropout rate from 1.

Average Cost Per Student Per Year

The average cost per student per year was calculated from data provided by the Oklahoma State Department of Vocational and Technical Education. The average cost per student per year was derived by dividing the total amount of dollars actually expended in the program service division by the number of students enrolled in the program service division. The total number of students enrolled included all students; secondary, post-secondary and adult. This was due to the fact that the expenditure data was reported for the total enrollment and could not be refined into the desired full-time category at this time. Therefore, these figures should not be utilized as an absolute value but should be used only as an indicator for relevant comparisons and estimates.

Annual Cost for Adjusting Full-Time Public Sector Supply

This cost was calculated by multiplying the average cost per student per year with the required adjustment in annual enrollment for the full-time public sector.

Median Salary of Graduates

The median salary of graduates placed in related jobs in Oklahoma was computed using the data collected by the OTIS staff on the direct student follow-up described in Chapter II and documented in Appendix D. The data was in the form of salary intervals, i.e., less than \$3000, \$3001 to \$4000; \$4001 to \$5000; \$5001 to \$6000; \$6001 to \$7000; and over \$7000. The median salary for each of the service divisions was computed using the following formula.

$$\text{median salary} = L + I \left(\frac{N/2 - F_b}{F_r} \right)$$

where:

L = the lower limit of the interval in which the median occurs

I = the interval size

F_b = the number of responses in intervals below the interval that contains the median

F_r = the number of responses in the interval that contains the median

N = sample size

Percent of Disadvantaged Served

The percent of disadvantaged students enrolled in the various service divisions was calculated using the student characteristics data collected in cycle I on OTIS Form 2. (Appendix A) The three categories of the disadvantaged examined were, (1) the culturally disadvantaged, (2) the physically handicapped and (3) the economically disadvantaged.

The culturally disadvantaged were defined as those students who indicated they were non-white. This included the Negroes, the Indians, the Orientals, the Mexican-Americans and the other non-whites.

The physically handicapped were defined as those students who had checked 'yes' on the question 'Physically Handicapped?' on OTIS Form 2.

The economically disadvantaged were defined as students who reported their family income was less than $3000 in 1967.

In each of the above categories, the number, of students in a service division, was divided by the number of disadvantaged in that service division to give the required ratio.

Placement Rate

The percent of graduates from occupational training who were placed in related employment was determined using data from the two follow-up studies described in Chapter II and documented in Appendix D. Graduates who were employed in a related field within three to five months after the completion of training were considered placed in related fields. The number of graduates so placed divided by the total number of graduates determined the placement rate.

Selected Parameters Describing Full-Time Public Programs

In all, thirteen parameters were selected by the OTIS staff to analyze the program mix in Oklahoma by service division. These are:

a. Estimated Net Manpower Required
b. Estimated Percent of Supply Presently Supplied by Full-Time Public Programs
c. Estimated Manpower Requirements to be Supplied by Full-Time Public Programs
d. Reported Overall Dropout Rate of Full-Time Public Program Students
e. Estimated Percent of Full-Time Public Program Graduates Available for Placement
f. Estimated Required Adjustment in Annual Full-Time Public Program Enrollment

g. Estimated Cost Per Student Per Year in Full-Time Public Enrollment
h. Estimated Annual Cost for Adjusting Full-Time Public Enrollment
i. Reported Percent of Culturally Disadvantaged Students Enrolled
j. Reported Percent of Physically Handicapped Enrolled
k. Reported Percent of Economically Disadvantaged Students Enrolled
l. Reported Median Salary of Graduates Taking Full-Time Related Jobs
m. Reported Percent of Graduates Placed in Related Training

The parameters have been used in the exemplary analysis on the following pages. The figures used were developed by using the available data as explained earlier in the procedures.

An Exemplary Analysis of Full-Time Public Training

Full-time public training is analyzed in the following section by program service division. The parameters defined in Table XXXIII and the rank ordering in Table XXXII summaraize the data used here. The entire analysis which follows and the recommendations section of this report are suggestive to Oklahoma's decision-makers who affect manpower policy. In no way is any of the analyses or subsequent recommendations intended to infringe upon the decision-making domain of co-sponsoring or cooperating agency personnel.

Exemplary Analysis of Vocational Agriculture

The statewide net manpower requirement in agriculture occupations shows an excess of supply of 62 trained personnel (this figure does not reflect agriculture training in distributive fields). Full-time public education presently provides 90.4 percent of the manpower supply for these occupations as identified in this study. Assuming this ratio remains constant, the full-time public sector would be responsible for reducing its output by 56

TABLE XXXIII

SELECTED PARAMETERS DESCRIBING FULL-TIME PROGRAMS BY SERVICE DIVISION

	Estimated Net Manpower Requirements (Demand Minus Supply)	Estimated Percent of Supply Presently Full-time Public Sector	Estimated Manpower Requirements to be Supplied by Full-Time Public	Reported Overall Dropout Rate (Full-Time Public - Percent)	Estimated Percent of Full-Time Public Graduates Available for Jobs	Estimated Required Adjustment in Annual Enrollment (Full-Time Pub.)	Estimated Average Cost Per Student Per Year ($) (Local & Federal)	Estimated Annual Cost For Adjusting Full-Time Public Sector Supply	Reported Median Salary of Graduates Taking Full-Time Related Jobs	Reported Percent of Students Culturally Disadvantaged	Reported Percent of Students Physically Handicapped	Reported Percent of Students Economically Handicapped	Reported Percent of Graduates Placed in Related Jobs
Vocational Agriculture	(62)	90.4	(56)	55	28.3	(431)	142.56	(61,443.36)	3687	10.1	3.1	13.0	13
Distributive Education	1829	25.7	470	36	40.6	1809	158.28	286,328.52	3222	5.5	2.6	4.2	21
Health Education	1180	24.3	287	12	79.2	410	220.98	90,601.80	4214	11.8	3.4	10.7	68
Home Economics Education (Useful)	-	-	-	75	-	-	83.40	-	-	14.9	2.4	12.3	-
Home Economics Education (Gainful)	463	6.6	31	23	27.0	149	153.47	22,867.03	Less Than 3000				11
Office Education	3063	14.7	450	29	47.9	1323	217.22	288,382.08	3785	12.0	2.3	9.7	30
Technical Education	(278)	42.5	(118)	58	27.2	(1033)	359.68	(371,549.44)	5667	12.0	3.4	7.2	28
Trade-Industrial Education	3003	32.2	966	58	50.2	4582	224.95	1,030,720.90	3754	20.7	5.5	13.9	30

trained workers to achieve their share of a zero demand minus supply balance.

With the present dropout and graduate availability rates, a decrease in enrollment of 431 students would be needed to decrease the excess of supply by 56 workers. If a decrease in enrollment of 431 students was affected, the vocational agriculture budget could be decreased by an estimated $61,000 (local, state and federal funds).

The dropout rate (55 percent) seems to be acceptable when compared with other service divisions due to the longer average length of this type of training. The percent of graduates available for placement is comparatively low (28.3 percent) and the percentage of students placed in jobs related to training in Oklahoma is 13 percent which is low in comparison with the other service divisions. (Note: Agriculture students may take longer to be placed in related jobs than the survey period allowed. A reason for this phenomena might be the need for financial backing.)

Vocational agriculture seems to train a proportionate share of the disadvantaged as identified in this study.

The median starting salary for those trainees who completed the program and are employed full-time in related occupations is $3,687 annually. This median salary is higher than median salaries of Home Economics and Distributive Education graduates but is less than the median salaries in the four other service divisions. (Note: All vocational agriculture students are trained at the secondary level which may partially account for this salary difference.)

Within the division, production agriculture and agriculture mechanics produce an over-supply of graduates (213 workers) and a net demand in horticulture (151 workers).

In summary, the following factors seem relevant when discussing vocational agriculture training in Oklahoma based on cycle II data.

1. With the present dropout and graduate availability rates, the vocational agriculture budget (local, state, and federal) could be cut $61,000 and still provide the output required to meet a proportionate share of relevant manpower requirements.
2. The graduate availability and placement rates for vocational agriculture programs are comparatively low; possibly due to bias introduced by the short follow-up period.

Exemplary Analysis of Distributive Education

The statewide net manpower requirements in distributive occupations shows a need for 1,829 additional workers. Full-time public education presently provides 25.7 percent of the distributive manpower supply as identified in this study. Assuming this ratio remains constant, the full-time public sector would be responsible for supply 470 additional skilled workers as its contribution towards achieving a zero demand minus supply balance.

With the present dropout and graduate availability rates, 1,809 additional students would need to be enrolled in distributive education programs to provide the 470 workers. The estimated annual cost for training 1,809 more students in distributive education programs would approximately be $286,000 (local, state and federal funds).

Neither the dropout rate (36 percent) nor the graduate availability rate (40.6 percent) seem disproportionate when compared with other service divisions, however, only 21 percent of those who graduate are actually placed in related jobs which is comparatively low based on cycle II data (Note: This 21 percent is approximately 50 percent of graduates available for placement relative to data collected from students and 75 percent of the available for placement relative to the teacher survey data.)

Distributive education programs train a low proportion of disadvantaged or handicapped students in every category defined in this study. This is extremely significant in terms of the 1968 Vocational Amendments Act. This may be attributable to the nature of the employment which involves contacts with the public.

The median salary for those trainees who completed the program and are employed full-time in related occupations is $3,222 annually. (Note: The majority of graduates from this service division are less than 19 years old which partially accounts for the low beginning salaries received.) This median salary is lower than the median salaries of all service divisions with the exception of the home economics gainful division.

In summary, the following factors seem relevant based on cycle II data.

1. At the present dropout and graduate availability rates, the cost of meeting public education's part in training distributive workers would be an additional $286,000 per year (local, state and federal funds).
2. The disadvantaged, as identified in this study, have a low participation rate in distributive training as compared with other service divisions.

Exemplary Analysis of Health Education

The statewide net manpower requirement in health occupations shows a need for 1,180 additional workers. Full-time public education presently provides 24.3 percent of the health manpower supply as identified in this study. Assuming this ratio remains constant, the full-time public sector would be responsible for supplying 287 additional skilled workers as its contribution towards achieving a zero demand minus supply balance.

Assuming that the present dropout and graduate availability rates remain constant, 410 additional trainees would need to be enrolled in the health occupation division to provide 287 additional workers. The estimated annual cost for accomplishing this training would be $91,000 (local, state and federal funds).

The dropout rate in this program division is 12 percent which is a comparatively outstanding accomplishment. The percentage of full-time public graduates available for placement in related jobs is 79.2 percent and the percentage of graduates placed in related jobs in Oklahoma is 68 percent, both percentages are the highest found in any service division.

Health programs train a proportionate share of the disadvantaged and handicapped students in every category defined in this study.

The median starting salary for those trainees who completed the program and are employed full-time in related occupations is $4,214. This median salary is exceeded only by the median salary of the technical education division. (Note: The average age of graduates from health training is 25 years versus an average age of 19 for graduates from all program service areas.)

There is presently a demand for 542 nurses aides and 416 professional nurses in Oklahoma. Caution must be taken when implementing associate programs, however, due to the number of degree programs and baccalaureate programs which were not counted as supply in this study.

In summary, the following factor seems relevant:

1. The present dropout rate is exceptionally low, the availability and placement rates are high which places these three parameters in the most desirable ranges. The cost of meeting full-time

public education's part in training health workers would be an additional $91,000 per year.

Home Economics Education (Useful)

Home economics useful is that program service area which is devoted to home and family living and consumer education. It does not lend itself to the labor market orientation of this analysis. Therefore, decision-makers must develop and/or utilize existing procedures of a different nature to properly allocate resources within this area. This area should receive more attention in cycle III.

Exemplary Analysis of Home Economics Education (Gainful)

The statewide net manpower requirement in home economics education (gainful) shows a need for 463 additional workers. Full-time public education provides 6.6 percent of the home economics education (gainful) supply as defined by this study. Assuming this ratio remains constant, the full-time public sector would be responsible for supplying 31 additional skilled workers as its contribution towards achieving a zero demand minus supply balance.

With the present dropout and graduate availability rates, 149 additional trainees would need to be enrolled in home economics education to provide 31 additional workers. The estimated annual cost for training 149 additional students in home economics education (gainful) would be $22,867.03 (local, state and federal funds).

The dropout rate of 23 percent is relatively low compared to the other program divisions. Only health education has a lower dropout rate. The percent of graduates available for jobs is 27 percent and is the lowest of all program divisions. The percentage of graduates placed in related jobs is 11 percent. This is the lowest rate of all the program divisions and is approximated only by 13 percent in vocational agriculture.

Home economics education gainful trains a proportionate share of the disadvantaged as identified in this study.

The median starting salary for those trainees who completed the program and employed full-time in related occupations is less than $3,000 annually. This is the lowest median salary among the seven program service areas. (Note: Only a small number of graduates reported their annual salaries and therefore data bias may exist.)

Primary emphasis on new program starts should be placed on training sewing machine operators (269 additional workers needed in 1969-70).

In summary, the following factors seem relevant:

1. At the present dropout and graduate availability rates, the cost of meeting public education's part in training home economics education (gainful) workers would be an additional $23,000 per year (local, state and federal funds).
2. The percentage of persons placed in related occupations is 11 percent which is low relative to the other divisions and should be studied to determine if an improvement can be effected.
3. The disadvantaged as identified in this study have a participation rate which seems proportionate when compared with the other program divisions.

Exemplary Analysis of Office Education

The statewide net manpower requirement in Office Education shows a need for 3,063 additional workers. Full-time public education provides 14.7 percent of the Office Occupations supply as defined by this study. Assuming this ratio remains constant, a full-time public sector would be responsible for supplying 450 additional skilled workers as its contribution towards achieving a zero demand minus supply balance.

With the present dropout and graduate availability rates, 1,323 additional trainees would need to be enrolled in the Office Education area to provide 450 trained workers. The estimated cost for training 1,323 additional students in office education programs would be approximately $287,000 annually (local, state and federal funds).

The dropout rate (29 percent) and the graduate availability rate (47.9 percent) seem to be satisfactory when compared with other service divisions as is the placement rate (30 percent).

The proportion of full-time office education students who are in the disadvantaged categories defined in this study is proportionate in all areas except physically handicapped. This can probably be attributed to the nature of the employment.

The median starting salary for those trainees who completed the program and are employed full-time in related occupation is $3,785 annually. There are four service divisions which have higher median starting salaries.

In summary, the following factor seems relevant:

1. At the present dropout and graduate availability rates, the annual cost of meeting public education's part in training office workers would be $287,382.08.

Exemplary Analysis of Technical Education

The statewide net manpower requirement in technical education shows an excess of 278 trained workers. Full-time public education presently provided 42.5 percent of the trained technical manpower supply as identified in this study. Assuming this ratio remains constant, the full-time public sector would be responsible for cutting the technical manpower supply by 118 trained workers as its contribution to achieving a zero demand minus supply balance. (Note: There are approximately 130 high school graduates in the technical manpower supply who moved to advanced technical training.)

With the present dropout and graduate availability rates, the enrollment in technical education would need to be cut by 1,033 students to decrease the supply by 118 workers. The estimated annual savings from this cut in enrollment would be approximately $372,000 (local, state and federal funds). (Note: This includes funds to high schools, junior colleges, senior colleges, technical institutes and area schools: all of which have different funding formulas.)

The high dropout rate (58 percent) can probably be attributed to the rigorous nature of the training. The graduate available for placement rate is low while the percent of students placed in related jobs is proportionate. The median salary for those placed in related training is the highest for any service division ($5,665).

A proportionate number of disadvantaged are trained in technical programs in all categories examined in this study.

Program areas within the division that show a significant oversupply include Drafting and Design (258 workers), Electronics (122 workers) and business oriented computer science (278 workers). These significant and critical areas of estimated oversupply are counter balanced by estimated areas of undersupply to generate the final figure of 278. Caution should be taken when examining drafting and design programs because of large part of the oversupply could possibly be attributed to a trade and industrial service division drafting program which produces a lower level trainee in terms of job skills.

In summary, the following factors seem relevant:

1. At the present estimated dropout and gratuate availability rates, the enrollment in the technical education program division can be reduced by 1,033 students at an estimated reduction of $372,000 per year.
2. The estimated percent of graduates available for jobs in Oklahoma is 27.2 percent which is low compared to the other service divisions.
3. The median starting salary of $5,665 per year is higher than any other program service area.

Exemplary Analysis of Trade-Industrial Education

The statewide net manpower requirement in trade-industrial education shows a need for 3,003 additional workers. Full-time public education provides 32.2 percent of the trade-industrial occupations supply as defined by this study. Assuming this ratio remains constant, the full-time public sector would be responsible for supplying 966 additional skilled workers as its contribution towards achieving a zero demand minus supply balance.

With the present dropout and graduate availability rates, 4,582 additional students would need to be enrolled in the trade and industrial sector to output 966 additional workers. The estimated annual cost for training these additional students in trade and industrial education programs would be $1,031,000 per year.

The dropout rate of 58 percent is the same as that for technical education. This rate is the highest of all the service divisions providing manpower for employment. The percent of graduates available for placement in related jobs is 50.2 percent and is exceeded only by the health education division. The percent of graduates placed in related jobs is 30 percent which again is exceeded only by the health education division.

Trade-industrial education trains a comparatively high proportion of disadvantaged or handicapped students in every category defined in this study.

The median starting salary for those trainees who completed programs and are employed full-time in related occupations is $3,754 annually. This median starting salary is exceeded by the health, office and technical education divisions.

Within the division, two program clusters are oversupplying a highly significant number of graduates, i.e., auto mechanics (334 workers), and electronics assembler or vocational electronics (321 workers). Four program clusters show a need for a significant increase in training, i.e., cook/chef (542 workers); machine shop (456 workers); sheet metal (332 workers) and electrician (297 workers). In addition, several areas where training programs do not presently exist have a significant need for trained workers, i.e., product assembler (456 workers); aircraft assembler (349 workers); post office clerk (225 workers); telephone operators (224 workers); and housekeeper (209 workers). Several of the latter areas require a lower skill level and might provide significant occupational opportunity for the educationally disadvantaged.

In summary, the following factors seem relevant:

1. At the present dropout and graduate availability rates, the cost of meeting public education's part in training trade and industrial workers would be an additional $1,031,000 per year.
2. The dropout rate of 58 percent for the trade and industrial education division is one of the highest of all the seven divisions.

3. The participation rate of the disadvantaged and handicapped was the highest reported in all three categories.

An Analysis of Private School Programs

The analysis of supply and demand data on the proceding pages has some implications for private schools as well. As private schools share, on equal basis, more and more responsibility of program planning in the state, they will be called upon from time to time, to readjust their program offerings in conformation to the total manpower planning in the state. In general this will require updating and expansion of some existing programs, introduction of new programs, as also reduction and deletion of some programs.

For the purpose of present analysis it will be assumed that the percentage of the trained manpower demand serviced by the private schools will remain constant over a number of years. During the cycle II period, data from private schools was not available on all the thirteen parameters recognized earlier in this chapter.

Parameters on which the data is available are listed below:

a. Estimated net manpower required
b. Estimated percent of supply presently supplied by private schools
c. Estimated manpower requirements to be supplied by private schools
d. Estimated percent of private school graduates available for placement
e. Estimated required adjustment in annual private school enrollment
f. Reported median salary of graduates taking full-time related jobs
g. Reported percent of graduates placed in related job

Other parameters on which no reliable data is available at this time are as follows:

i. Overall dropout rate of private school programs

ii. Cost per student per year in private school enrollment

iii. Annual cost for adjusting private school enrollment

iv. Percent of culturally disadvantaged students enrolled

v. Percent of economically disadvantaged students enrolled

vi. Percent of physically handicapped enrolled

Table XXXIV gives the available data on the parameters already defined. Before we draw any conclusion the following points should be noted.

1. This analysis which is exemplary in nature is based on available data and to that extent it should be viewed as an indicator of trend only.
2. The analysis is based on the current supply and demand of trained manpower. National employment trends over short or long term have not been considered.
3. Other variables like student interests have not been considered as there are at present no satisfactory means available to quantify them.
4. Effectiveness measures for the training programs were not analyzed as the cost data for the programs was not available.
5. There are no training programs offered in private schools in the divisions of Vocational Agriculture, Distributive Education and Home Economics Education.
6. Average dropout figures are used on the follow-up data which does not reflect the number of students who drop out without learning a marketable skill; the adjustment figures are also estimated using these dropout figures.
7. Employment needs of only Oklahoma have been considered.

TABLE XXXIV

SELECTED PARAMETERS DESCRIBING PRIVATE SCHOOL PROGRAMS BY SERVICE DIVISION

	Estimated Net Manpower Requirements (Demand Minus Supply)	Estimated Percent of Supply Presently Full-Time Private Sector	Estimated Manpower Requirements to be Supplied by Full-Time Private	Reported Overall Droupout Rate (Full-Time Private Percent)	Estimated Percent of Full-Time Graduates Available for Jobs	Estimated Required Adjustment in Annual Enrollment (Full-Time)	Estimated Average Cost Per Student Per Year	Estimated Annual Cost For Adjusting Full-Time Sector Supply	Reported Median Salary of Graduates Taking Full-Time Related Jobs	Reported Percent of Students Culturally Disadvantaged	Reported Percent of Students Physically Handicapped	Reported Percent of Students Economically Handicapped	Reported Percent of Graduates Placed in Related Jobs
Vocational Agriculture	(62)	-	-	-	-	-	-	-	-	-	-	-	-
Distributive Education	1829	-	-	-	-	-	-	-	-	-	-	-	-
Health Education	1180	3.7	44	21	-	-	-	-	-	-	-	-	-
Home Economics Education (Useful)	-	-	-	-	-	-	-	-	-	-	-	-	-
Home Economics Education (Gainful)	463	--	-	-	-	-	-	-	-	-	-	-	-
Office Education	3063	13.1	401	21	48	835	-	-	4175	-	-	-	39.8
Technical Education	(278)	32.5	(90)	21	30	(300)	-	-	6707	-	-	-	59.7
Trade-Industrial Education	3003	6.7	201	21	40	502	-	-	5586	-	-	-	46.3

From the foregoing it can be seen that on the basis of present available figures the private schools should expand their programs in Office Education by 835 new enrollments, Trade and Industrial programs by 502 new enrollments, and at the same time cut back Technical programs by 300 enrollments. No figures are available for health for which complete data are not available.

In summary the need for more and accurate data can not be overemphasized. Similar analysis, with more and better data, can be made for individual programs that will help in meaningful program planning.

CHAPTER IV

OTIS--ITS PRESENT IMPACT AND FUTURE DIRECTION

Introduction

Two possible methods that may be used to evaluate the effectiveness of a system are (1) the disposition of the system when it is ready to become operational and (2) how the data produced by the system is utilized. This chapter examines these two factors as they relate to the present impact of OTIS and its future direction.

The Present Impact of OTIS

The Occupational Training Information System (OTIS) has been utilized in many ways, some of which were foreseen and others which were unexpected. Users of OTIS data included the State Department of Vocational and Technical Education, the Oklahoma Industrial Development and Park Department, vocational-technical area schools, high schools, technical institutes, junior colleges, private vocational schools and private industry. In addition, the data have been a spring board for many special reports, doctoral dissertations, and masters' theses related to different aspects of manpower planning.

The State Department of Vocational and Technical Education has used OTIS data in the following ways.

1. The data were used as a starting point for the manpower demand and supply interfacing (matching) presented in the 1970-71 Oklahoma

State Plan for Administration of Vocational Education.

2. The data were used as a vital input to the reimbursement procedures recently developed by the Oklahoma Department of Vocational and Technical Education. These reimbursement procedures are an important part of the overall planning effort to match manpower supply with demand. Table XXXV shows a comparison of the program changes by service division for the years 1969-70 and 1970-71.

TABLE XXXV

A COMPARISON OF NEW PROGRAM STARTS PROJECTED IN THE 1969-70 AND 1970-71 OKLAHOMA STATE PLANS FOR VOCATIONAL AND TECHNICAL EDUCATION BY SERVICE DIVISIONS

Service Divisions	Projected Starts in the State Plan	
	1969-70	1970-71
Vocational Agriculture	11	0
Distributive Education	8	13
Health	15	76
Home Economics (Useful)	8	6
Home Economics (Gainful)	21	24
Business and Office	0	27
Technical Education	0	9*
Trade and Industrial Education	23	30

*The projected starts in Technical Education were primarily electromechanical programs which are supported on the basis of a special nationwide electromechanical technician demand survey.

The distribution of projected program starts is very much in line with the OTIS supply and demand data as shown in Table XXXVI.

TABLE XXXVI

DISTRIBUTION OF PROGRAM STARTS PROJECTED IN THE 1970-71 OKLAHOMA STATE PLAN RELATIVE TO THE OTIS INTERFACING

	Programs not included in the OTIS Cycle II Report as Interfacing	Programs in Areas where a Statewide Over Supply of Manpower was Reported in the OTIS Cycle II Report	Programs where Sufficient Net-Manpower Demand was Reported in the OTIS Cycle II Report
Number of Programs	21	20*	144

*The state plan only reported aggregate statewide manpower data. Some starts were projected in areas where demand was evident on a regional labor market (within Oklahoma) basis and not on statewide basis.

In addition to the manpower supply and demand considerations used for caculating the distribution of programs starts presented in Tables XXXV and XXXVI above, the following criteria were considered in descending order of importance: vocational education needs of an geographic area particularly the training needs of the disadvantaged, handicapped, and unemployed youth; relative ability of an area to pay; excessive program costs of an area; whether the area is in an economically depressed condition; and whether the area was supporting any special demonstration and/or pilot programs.

3. The data were used in identifying programs that had a high concentration of culturally disadvantaged, economically disadvantaged or physically handicapped students in Oklahoma's attempt to allocate its resources as outlined by the 1968 Amendments.
4. The data were utilized to help evaluate some specific local programs by providing follow-up data on the graduates.
5. OTIS data were used to identify new areas of employment for which

new types of training are presently being developed. Special programs to meet immediate needs of industry have been conducted in machine operations, welding, and power sewing machine operations due to contacts made through interviews with industry during the manpower demand survey.

6. OTIS industrial demand data were utilized to identify major employer representatives to serve on local program advisory committees.
7. OTIS industrial demand data were used by some area vocational-technical schools for direct and specific placement purposes.

Local public schools have used the data to determine the feasibility of new and old programs and to acquire local, state, and federal funding to support programs which served a documented need.

Private schools have used the OTIS data in the following ways:

1. The data were used to help determine the feasibility of new programs.
2. Follow-up data were used for accreditation purposes.
3. The data were used for recruitment of students into programs where employment benefits are greatest.

The Oklahoma Industrial Development and Park Department used the data to update the Oklahoma Manufacturer's Guide which lists all manufacturers and their major products. This document is used to help recruit new industry for Oklahoma and to provide information for established industries.

Private industries used the data to locate other firms with the qualified manpower to provide support for their activities. For example, results at present indicate that over $500,000.00 worth of contracts for sub-assemblies that might have otherwise been produced outside of Oklahoma have been signed or are in the process of being negotiated within the state.

The Future of OTIS

At the end of the developmental phase of OTIS in January of 1970, the responsibility for continued development and implementation of the project was assigned to the Research, Planning and Evaluation Division of the State Department of Vocational and Technical Education. All contributing and cooperating agencies involved agreed to this organization.

One of the first steps in the change of OTIS operations from Oklahoma State University to the State Department of Vocational and Technical Education was the acquisition of qualified staff to perform the various tasks required by the system. At present, a data analyst has been retained to direct and coordinate the various components of the system. Additional staff positions have been defined and are now being filled as qualified manpower becomes available.

In addition to the full-time personnel, consultants from the original OTIS staff have been retained to advise on the details of system operation, continue liaison with the private schools, and to help with interagency coordination.

A budget of over $100,000.00 has been defined and sources of funding have been identified in many cases. It appears at this time that the entire budget will be realized for the coming fiscal year with many agencies contributing funding for the continuation of the project.

Various activities that have continued through the transition period include, (1) keypunching, (2) planning, (3) pretesting new instruments to be used in data collection in the coming year, (4) cooperation with representatives from the greater Tulsa Metropolitan area on an underdeveloped human resources study, (5) a study of enrollment rates, dropout rates and economic benefits that characterize the experience of the disadvantaged in vocational education in Oklahoma, (6) a study of Office of Education Codes and their applicability to private school programs, (7) coordination with private schools in terms of an organization center which will handle OTIS data from this sector, (8) a study of mobility patterns of graduates from vocational training, (9) the development of a model of a vocational education system, and (10) a study of adults in occupational training.

In addition to the above activities, a contract has been signed with the Employment Security Commission to collect data on health manpower demands during the summer of 1970. Simultaneously, vocational teachers across the state are cooperating in the collection of manpower demand data on specific service occupations and industrial coordinators are updating the industrial demand data collected in the summer of 1969.

Plans are being outlined to collect manpower demand data from government agencies, public utilities and mining industries during the winter of 1970-71. It is hoped that the Employment Security Commission will be an integral part of this activity.

APPENDIX A

DOCUMENTATION OF THE MANPOWER SUPPLY SUBSYSTEM

Objective

The objective of this subsystem was to collect supply data for interfacing with demand data (See Appendix I for a description of interfacing). Other objectives were the collection of student names and addresses for follow-up purposes and data for student characteristics reports.

Procedure

The action in this subsystem was divided into three phases, i.e., data collection, data processing and dissemination of data.

Step 1 - Collection of Supply Data

The substeps used to collect supply data (phase 1) are as follows: (See Figure A-1 for a graphic description of this phase).

1. The Oklahoma State Department of Vocational and Technical Education distributed VE Forms 6000 and 6000-A (See Figure A-2 and A-3) at a preschool conference of teachers in August 1969 (Note: These forms superceded the 1968-69 OTIS Form 1 and OTIS Form 2 for public schools. See Figures A-4 and A-5). At this time, instructions were given to teachers on how to complete these forms.
2. The teachers completed the VE Form 6000's and returned them to the State Department of Vocational and Technical Education.
3. The teachers helped their students complete the VE Forms 6000-A's and returned them to the State Department of Vocational and Technical Education.

4. The State Supervisors of the seven occupational divisions summarized the data on manpower supply, collected on VE Form 6000, on OTIS Form S-1 (See Figure A-6) and returned it to the OTIS Staff.
5. The State Supervisor of Adult Training made projections of the coming year's manpower supply from adult programs on 1968-69 adult programs and adult programs requests for 1969-70. This data was then given to the OTIS Staff.
6. The State Supervisor of MDTA Programs provided projections of manpower supply from MDTA programs for the coming year based on present planned programs. This data was then given to the OTIS Staff.
7. The OTIS Staff collected OTIS Form 2 (1969-70 version for private schools, see Figure A-7) data from private school students.
8. The OTIS Staff collected OTIS Form 1 Data (1969-70 version for private schools) from private school administrators.
9. The MDTA Supervisor and the Adult Program Supervisor plan to collect VE Form 6000-A information as programs are initiated and return the data to the OTIS Staff.
10. The Oklahoma Employment Security Commission projected the number of registrants and "On Job Training" graduates for the coming year based on previous year's experience and gave the data to the OTIS Staff.

Step 2 - Processing Supply Data

The substeps used to process supply data (phase 2) are as follows:

1. A percent (See Appendix I) of the VE 6000 data was entered on

the interfacing forms based on the projected percent of graduates available for training. This percentage varied from 27.0 percent to 79.2 percent depending on service division. These percentages were selected based on follow-up of public school graduates.

2. Twenty percent of the projected adult program graduates were entered on the interfacing forms. This percentage was selected on the advice of the State Supervisor of Adult Training and the Directors of Adult Education in Tulsa and Oklahoma City. They felt that it represented the proportion of adult students who would be available for placement. This percentage will be corrected based on future follow-ups of adult students.
3. All of the projected MDTA graduates were entered on the interfacing form as available for placement. (Note: This percentage will be corrected based on future follow-ups).
4. From 14 percent to 48 percent of the private school graduates were entered on the interfacing forms depending on program type. These percentages were based on the follow-up of private school graduates.
5. The registrants and OJT graduates were entered in the interfacing as data was provided by the OESC.
6. The 6000-A and OTIS Form 2's (1969-70 version for private schools) were coded with school codes and program codes (Note: These codes were coordinated with codes used by the State Department of Vocational and Technical Education).
7. The 6000-A and OTIS Form 2 information was keypunched and verified by the Oklahoma State University Computer Center (See Figure A-8 for a format of data cards). Plans have been made for

future keypunching functions to be handled by the public school data processing programs.

8. The card data was transferred to computer tape (See Figure A-9).

Step 3 - Dissemination of Data

Various reports were disseminated to selected decision makers and other subsystems. These included, (1) several student characteristics reports to the State Department of Vocational and Technical Education (See Figure A-10 and A-11 for examples) and (2) student names and addresses for follow-up.

Cost

The data collection occurred as a part of the regular duties of personnel involved and did not substantially affect cost. The coding and keypunching and other processing cost approximately eight cents per record (57,710 records were processed in 1969).

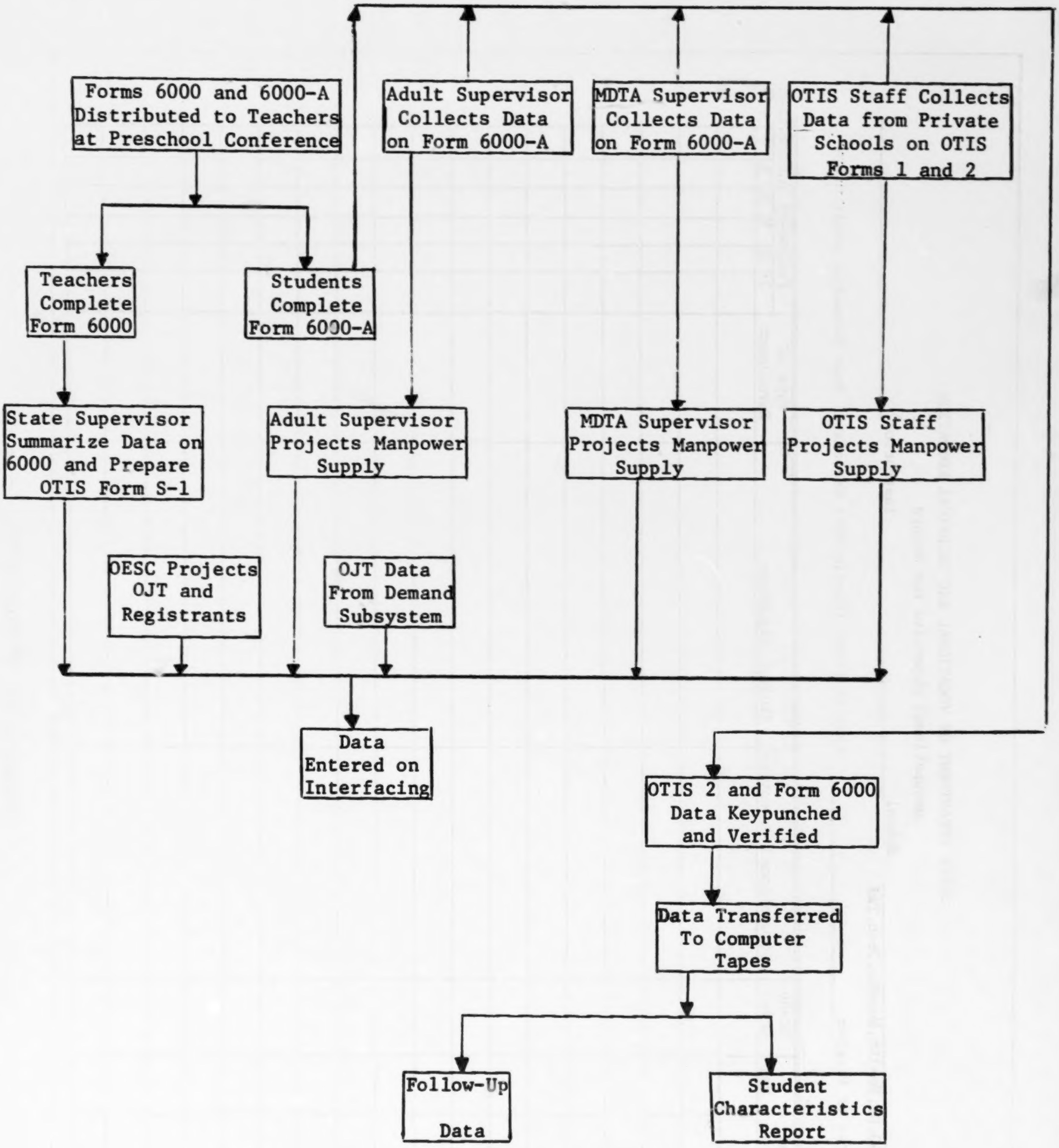
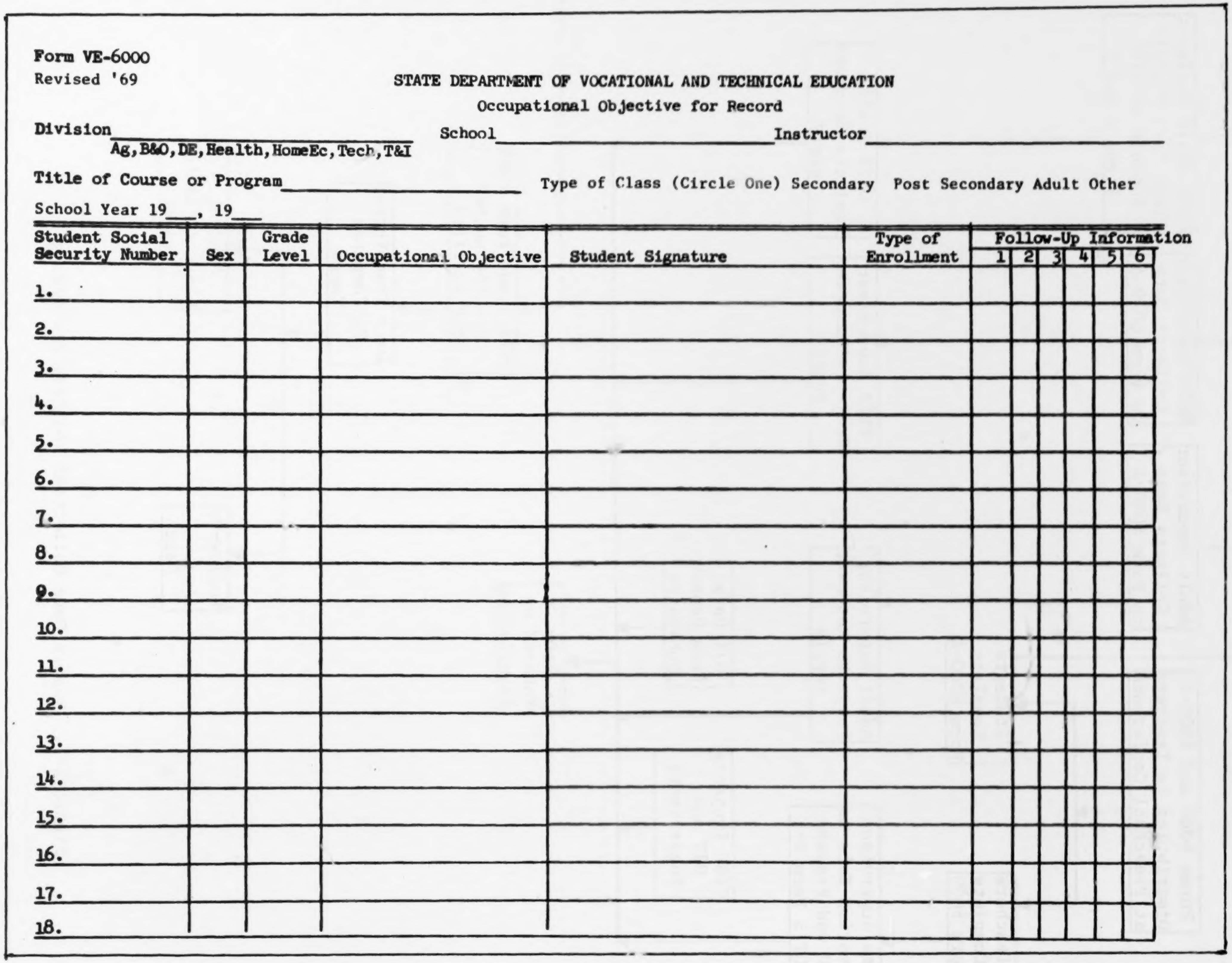

Forms 6000 and 6000-A Distributed to Teachers at Preschool Conference
Adult Supervisor Collects Data on Form 6000-A
MDTA Supervisor Collects Data on Form 6000-A
OTIS Staff Collects Data from Private Schools on OTIS Forms 1 and 2
Teachers Complete Form 6000
Students Complete Form 6000-A
State Supervisor Summarize Data on 6000 and Prepare OTIS Form S-1
Adult Supervisor Projects Manpower Supply
MDTA Supervisor Projects Manpower Supply
OTIS Staff Projects Manpower Supply
OESC Projects OJT and Registrants
OJT Data From Demand Subsystem
Data Entered on Interfacing
OTIS 2 and Form 6000 Data Keypunched and Verified
Data Transferred To Computer Tapes
Follow-Up Data
Student Characteristics Report

Figure A-1. Supply Data Collection and Data Processing



Form VE-6000
Revised '69

STATE DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION
Occupational Objective for Record

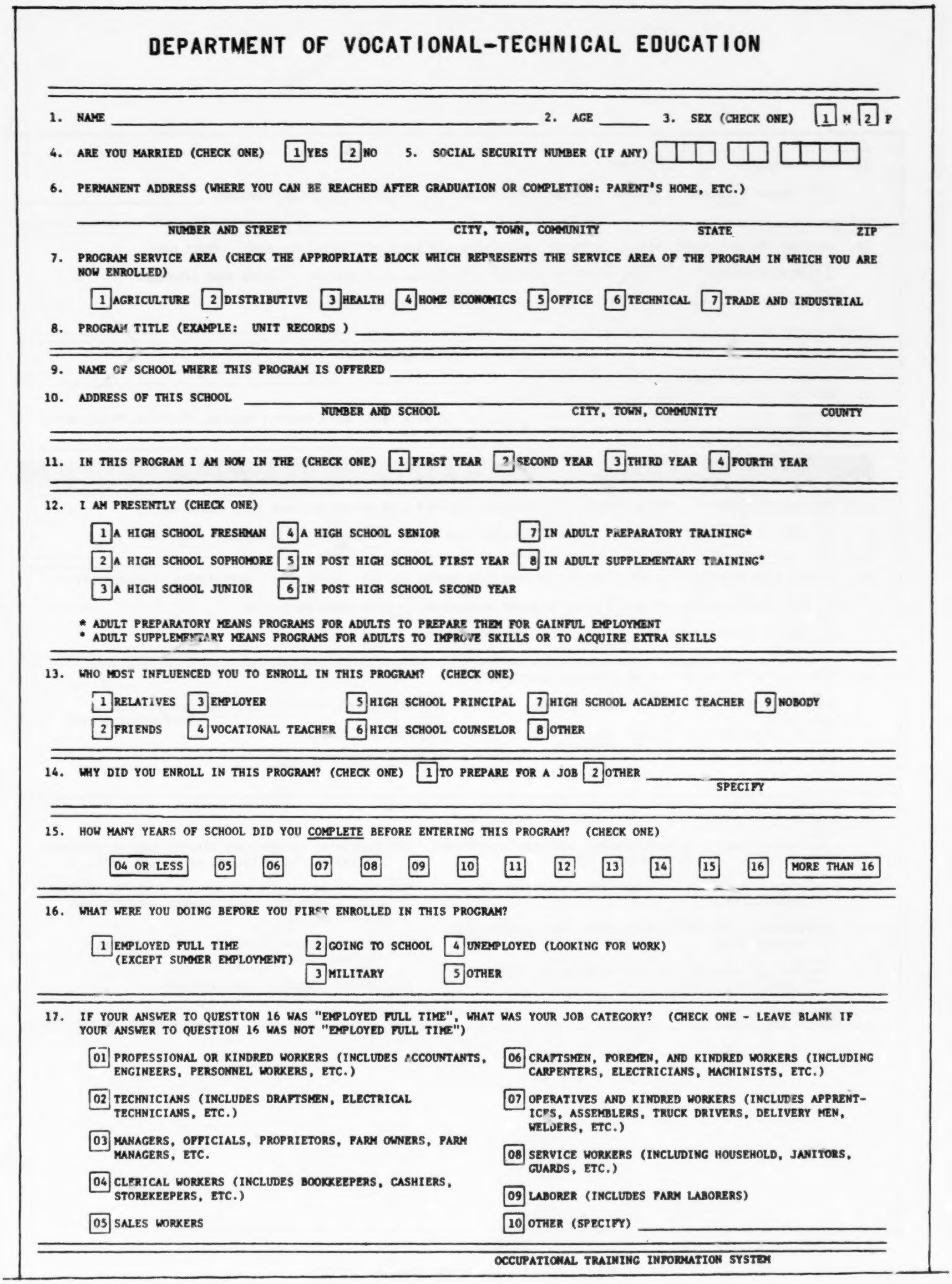
Division____________________ School____________________ Instructor____________________
Ag,B&O,DE,Health,HomeEc,Tech,T&I

Title of Course or Program____________________ Type of Class (Circle One) Secondary Post Secondary Adult Other

School Year 19___, 19___

Student Social Security Number	Sex	Grade Level	Occupational Objective	Student Signature	Type of Enrollment	Follow-Up Information					
						1	2	3	4	5	6
1.											
2.											
3.											
4.											
5.											
6.											
7.											
8.											
9.											
10.											
11.											
12.											
13.											
14.											
15.											
16.											
17.											
18.											

Figure A-2. VE Form 6000



DEPARTMENT OF VOCATIONAL-TECHNICAL EDUCATION

1. NAME ____________________ 2. AGE ______ 3. SEX (CHECK ONE) ☐1 M ☐2 F

4. ARE YOU MARRIED (CHECK ONE) ☐1 YES ☐2 NO 5. SOCIAL SECURITY NUMBER (IF ANY) ☐☐☐ ☐☐ ☐☐☐☐

6. PERMANENT ADDRESS (WHERE YOU CAN BE REACHED AFTER GRADUATION OR COMPLETION: PARENT'S HOME, ETC.)

____

NUMBER AND STREET CITY, TOWN, COMMUNITY STATE ZIP

7. PROGRAM SERVICE AREA (CHECK THE APPROPRIATE BLOCK WHICH REPRESENTS THE SERVICE AREA OF THE PROGRAM IN WHICH YOU ARE NOW ENROLLED)

☐1 AGRICULTURE ☐2 DISTRIBUTIVE ☐3 HEALTH ☐4 HOME ECONOMICS ☐5 OFFICE ☐6 TECHNICAL ☐7 TRADE AND INDUSTRIAL

8. PROGRAM TITLE (EXAMPLE: UNIT RECORDS) ____________________

9. NAME OF SCHOOL WHERE THIS PROGRAM IS OFFERED ____________________

10. ADDRESS OF THIS SCHOOL ____________________

NUMBER AND SCHOOL CITY, TOWN, COMMUNITY COUNTY

11. IN THIS PROGRAM I AM NOW IN THE (CHECK ONE) ☐1 FIRST YEAR ☐2 SECOND YEAR ☐3 THIRD YEAR ☐4 FOURTH YEAR

12. I AM PRESENTLY (CHECK ONE)

☐1 A HIGH SCHOOL FRESHMAN ☐4 A HIGH SCHOOL SENIOR ☐7 IN ADULT PREPARATORY TRAINING*

☐2 A HIGH SCHOOL SOPHOMORE ☐5 IN POST HIGH SCHOOL FIRST YEAR ☐8 IN ADULT SUPPLEMENTARY TRAINING•

☐3 A HIGH SCHOOL JUNIOR ☐6 IN POST HIGH SCHOOL SECOND YEAR

* ADULT PREPARATORY MEANS PROGRAMS FOR ADULTS TO PREPARE THEM FOR GAINFUL EMPLOYMENT
• ADULT SUPPLEMENTARY MEANS PROGRAMS FOR ADULTS TO IMPROVE SKILLS OR TO ACQUIRE EXTRA SKILLS

13. WHO MOST INFLUENCED YOU TO ENROLL IN THIS PROGRAM? (CHECK ONE)

☐1 RELATIVES ☐3 EMPLOYER ☐5 HIGH SCHOOL PRINCIPAL ☐7 HIGH SCHOOL ACADEMIC TEACHER ☐9 NOBODY

☐2 FRIENDS ☐4 VOCATIONAL TEACHER ☐6 HIGH SCHOOL COUNSELOR ☐8 OTHER

14. WHY DID YOU ENROLL IN THIS PROGRAM? (CHECK ONE) ☐1 TO PREPARE FOR A JOB ☐2 OTHER ____________________

SPECIFY

15. HOW MANY YEARS OF SCHOOL DID YOU COMPLETE BEFORE ENTERING THIS PROGRAM? (CHECK ONE)

☐ 04 OR LESS ☐05 ☐06 ☐07 ☐08 ☐09 ☐10 ☐11 ☐12 ☐13 ☐14 ☐15 ☐16 ☐ MORE THAN 16

16. WHAT WERE YOU DOING BEFORE YOU FIRST ENROLLED IN THIS PROGRAM?

☐1 EMPLOYED FULL TIME (EXCEPT SUMMER EMPLOYMENT) ☐2 GOING TO SCHOOL ☐4 UNEMPLOYED (LOOKING FOR WORK)

☐3 MILITARY ☐5 OTHER

17. IF YOUR ANSWER TO QUESTION 16 WAS "EMPLOYED FULL TIME", WHAT WAS YOUR JOB CATEGORY? (CHECK ONE - LEAVE BLANK IF YOUR ANSWER TO QUESTION 16 WAS NOT "EMPLOYED FULL TIME")

☐01 PROFESSIONAL OR KINDRED WORKERS (INCLUDES ACCOUNTANTS, ENGINEERS, PERSONNEL WORKERS, ETC.)

☐02 TECHNICIANS (INCLUDES DRAFTSMEN, ELECTRICAL TECHNICIANS, ETC.)

☐03 MANAGERS, OFFICIALS, PROPRIETORS, FARM OWNERS, FARM MANAGERS, ETC.

☐04 CLERICAL WORKERS (INCLUDES BOOKKEEPERS, CASHIERS, STOREKEEPERS, ETC.)

☐05 SALES WORKERS

☐06 CRAFTSMEN, FOREMEN, AND KINDRED WORKERS (INCLUDING CARPENTERS, ELECTRICIANS, MACHINISTS, ETC.)

☐07 OPERATIVES AND KINDRED WORKERS (INCLUDES APPRENTICES, ASSEMBLERS, TRUCK DRIVERS, DELIVERY MEN, WELDERS, ETC.)

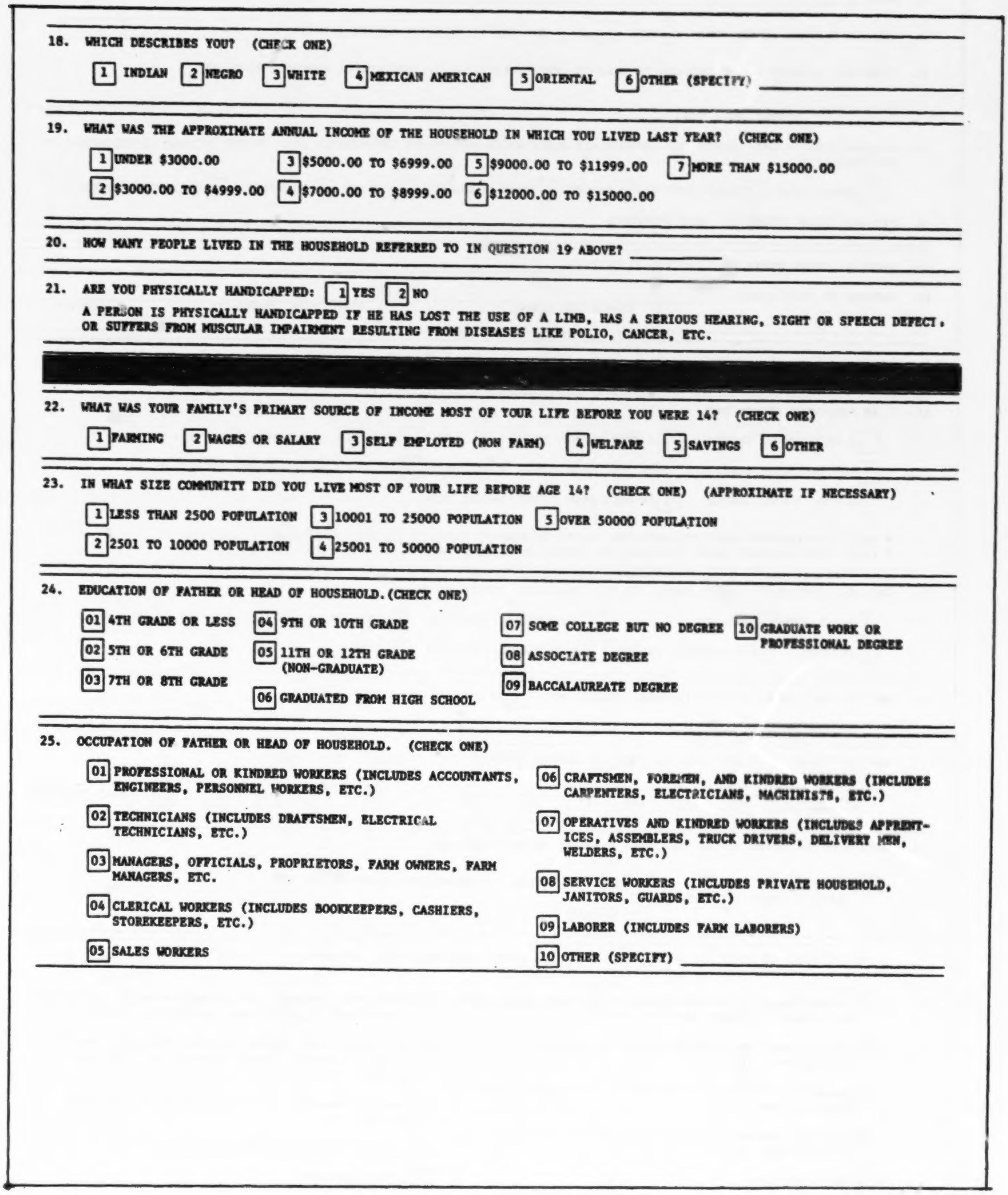
☐08 SERVICE WORKERS (INCLUDING HOUSEHOLD, JANITORS, GUARDS, ETC.)

☐09 LABORER (INCLUDES FARM LABORERS)

☐10 OTHER (SPECIFY) ____________________

OCCUPATIONAL TRAINING INFORMATION SYSTEM

Figure A-3. VE Form 6000-A
(continued on next page)



18. WHICH DESCRIBES YOU? (CHECK ONE)

1 INDIAN 2 NEGRO 3 WHITE 4 MEXICAN AMERICAN 5 ORIENTAL 6 OTHER (SPECIFY) ______

19. WHAT WAS THE APPROXIMATE ANNUAL INCOME OF THE HOUSEHOLD IN WHICH YOU LIVED LAST YEAR? (CHECK ONE)

1 UNDER $3000.00	3 $5000.00 TO $6999.00	5 $9000.00 TO $11999.00	7 MORE THAN $15000.00
2 $3000.00 TO $4999.00	4 $7000.00 TO $8999.00	6 $12000.00 TO $15000.00	

20. HOW MANY PEOPLE LIVED IN THE HOUSEHOLD REFERRED TO IN QUESTION 19 ABOVE? ______

21. ARE YOU PHYSICALLY HANDICAPPED: 1 YES 2 NO

A PERSON IS PHYSICALLY HANDICAPPED IF HE HAS LOST THE USE OF A LIMB, HAS A SERIOUS HEARING, SIGHT OR SPEECH DEFECT, OR SUFFERS FROM MUSCULAR IMPAIRMENT RESULTING FROM DISEASES LIKE POLIO, CANCER, ETC.

[redacted]

22. WHAT WAS YOUR FAMILY'S PRIMARY SOURCE OF INCOME MOST OF YOUR LIFE BEFORE YOU WERE 14? (CHECK ONE)

1 FARMING 2 WAGES OR SALARY 3 SELF EMPLOYED (NON FARM) 4 WELFARE 5 SAVINGS 6 OTHER

23. IN WHAT SIZE COMMUNITY DID YOU LIVE MOST OF YOUR LIFE BEFORE AGE 14? (CHECK ONE) (APPROXIMATE IF NECESSARY)

1 LESS THAN 2500 POPULATION	3 10001 TO 25000 POPULATION	5 OVER 50000 POPULATION
2 2501 TO 10000 POPULATION	4 25001 TO 50000 POPULATION	

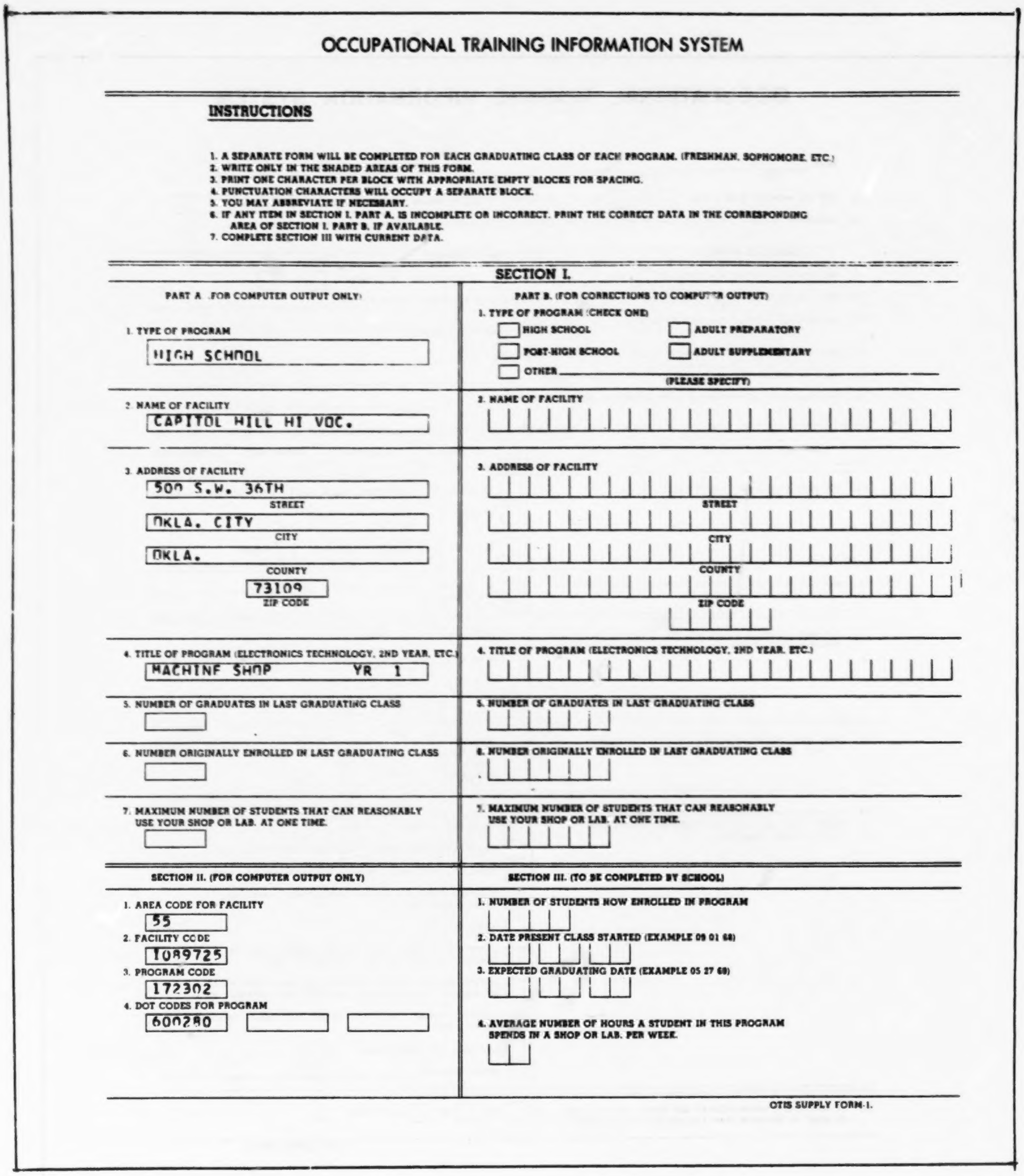
24. EDUCATION OF FATHER OR HEAD OF HOUSEHOLD. (CHECK ONE)

01 4TH GRADE OR LESS	04 9TH OR 10TH GRADE	07 SOME COLLEGE BUT NO DEGREE	10 GRADUATE WORK OR PROFESSIONAL DEGREE
02 5TH OR 6TH GRADE	05 11TH OR 12TH GRADE (NON-GRADUATE)	08 ASSOCIATE DEGREE	
03 7TH OR 8TH GRADE	06 GRADUATED FROM HIGH SCHOOL	09 BACCALAUREATE DEGREE	

25. OCCUPATION OF FATHER OR HEAD OF HOUSEHOLD. (CHECK ONE)

01 PROFESSIONAL OR KINDRED WORKERS (INCLUDES ACCOUNTANTS, ENGINEERS, PERSONNEL WORKERS, ETC.)	06 CRAFTSMEN, FOREMEN, AND KINDRED WORKERS (INCLUDES CARPENTERS, ELECTRICIANS, MACHINISTS, ETC.)
02 TECHNICIANS (INCLUDES DRAFTSMEN, ELECTRICAL TECHNICIANS, ETC.)	07 OPERATIVES AND KINDRED WORKERS (INCLUDES APPRENTICES, ASSEMBLERS, TRUCK DRIVERS, DELIVERY MEN, WELDERS, ETC.)
03 MANAGERS, OFFICIALS, PROPRIETORS, FARM OWNERS, FARM MANAGERS, ETC.	08 SERVICE WORKERS (INCLUDES PRIVATE HOUSEHOLD, JANITORS, GUARDS, ETC.)
04 CLERICAL WORKERS (INCLUDES BOOKKEEPERS, CASHIERS, STOREKEEPERS, ETC.)	09 LABORER (INCLUDES FARM LABORERS)
05 SALES WORKERS	10 OTHER (SPECIFY) ______

Figure A-3. VE Form 6000-A



OCCUPATIONAL TRAINING INFORMATION SYSTEM

INSTRUCTIONS

1. A SEPARATE FORM WILL BE COMPLETED FOR EACH GRADUATING CLASS OF EACH PROGRAM. (FRESHMAN, SOPHOMORE, ETC.)
2. WRITE ONLY IN THE SHADED AREAS OF THIS FORM.
3. PRINT ONE CHARACTER PER BLOCK WITH APPROPRIATE EMPTY BLOCKS FOR SPACING.
4. PUNCTUATION CHARACTERS WILL OCCUPY A SEPARATE BLOCK.
5. YOU MAY ABBREVIATE IF NECESSARY.
6. IF ANY ITEM IN SECTION I, PART A, IS INCOMPLETE OR INCORRECT, PRINT THE CORRECT DATA IN THE CORRESPONDING AREA OF SECTION I, PART B, IF AVAILABLE.
7. COMPLETE SECTION III WITH CURRENT DATA.

SECTION I.

PART A (FOR COMPUTER OUTPUT ONLY)

1. TYPE OF PROGRAM
HIGH SCHOOL

2. NAME OF FACILITY
CAPITOL HILL HI VOC.

3. ADDRESS OF FACILITY
500 S.W. 36TH
STREET
OKLA. CITY
CITY
OKLA.
COUNTY
73109
ZIP CODE

4. TITLE OF PROGRAM (ELECTRONICS TECHNOLOGY, 2ND YEAR, ETC.)
MACHINE SHOP YR 1

5. NUMBER OF GRADUATES IN LAST GRADUATING CLASS

6. NUMBER ORIGINALLY ENROLLED IN LAST GRADUATING CLASS

7. MAXIMUM NUMBER OF STUDENTS THAT CAN REASONABLY USE YOUR SHOP OR LAB. AT ONE TIME.

PART B. (FOR CORRECTIONS TO COMPUTER OUTPUT)

1. TYPE OF PROGRAM (CHECK ONE)
☐ HIGH SCHOOL ☐ ADULT PREPARATORY
☐ POST-HIGH SCHOOL ☐ ADULT SUPPLEMENTARY
☐ OTHER ____________ (PLEASE SPECIFY)

2. NAME OF FACILITY

3. ADDRESS OF FACILITY
STREET
CITY
COUNTY
ZIP CODE

4. TITLE OF PROGRAM (ELECTRONICS TECHNOLOGY, 2ND YEAR, ETC.)

5. NUMBER OF GRADUATES IN LAST GRADUATING CLASS

6. NUMBER ORIGINALLY ENROLLED IN LAST GRADUATING CLASS

7. MAXIMUM NUMBER OF STUDENTS THAT CAN REASONABLY USE YOUR SHOP OR LAB. AT ONE TIME.

SECTION II. (FOR COMPUTER OUTPUT ONLY)

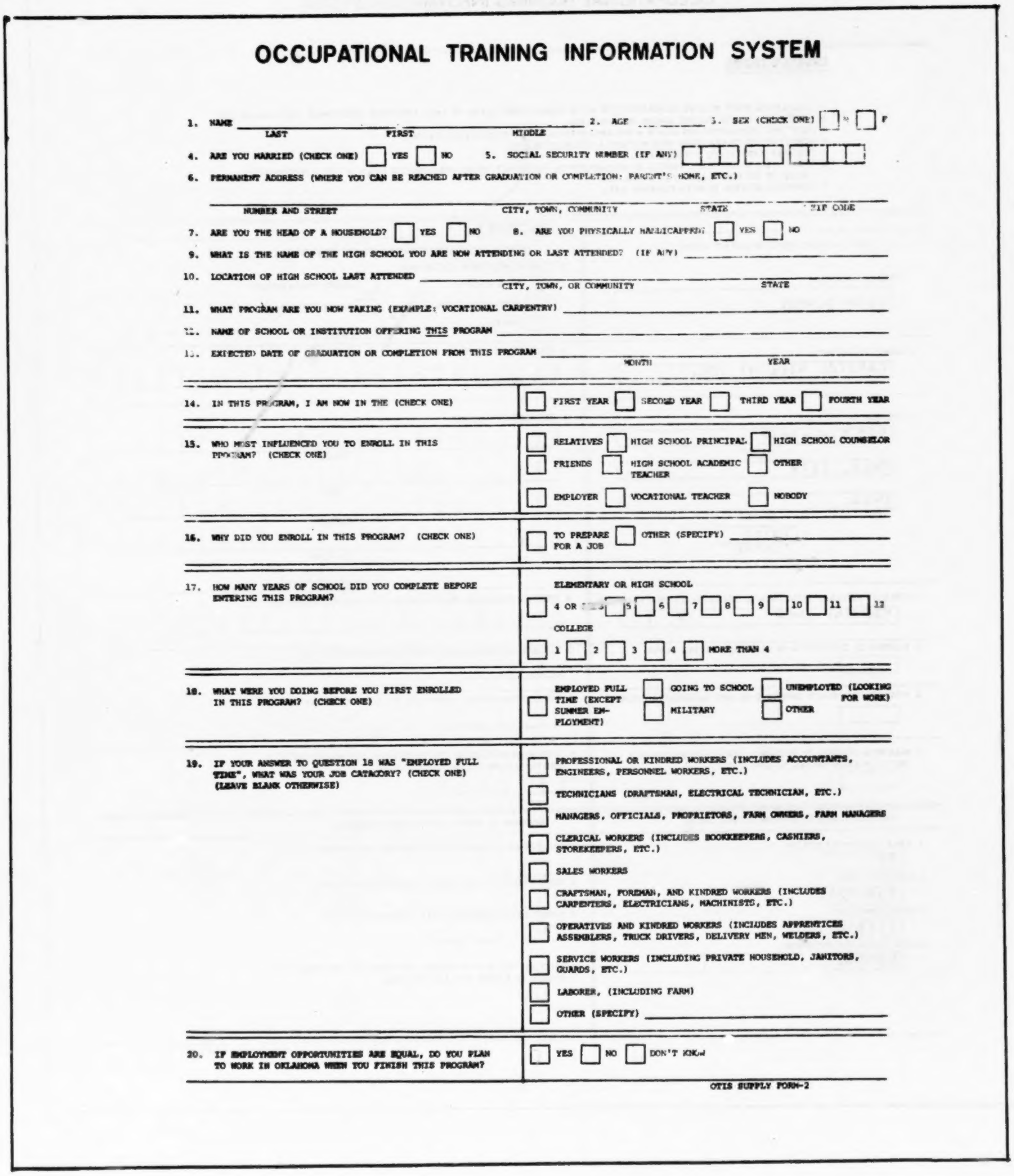
1. AREA CODE FOR FACILITY
55
2. FACILITY CODE
T089725
3. PROGRAM CODE
172302
4. DOT CODES FOR PROGRAM
600280

SECTION III. (TO BE COMPLETED BY SCHOOL)

1. NUMBER OF STUDENTS NOW ENROLLED IN PROGRAM
2. DATE PRESENT CLASS STARTED (EXAMPLE 09 01 68)
3. EXPECTED GRADUATING DATE (EXAMPLE 05 27 69)
4. AVERAGE NUMBER OF HOURS A STUDENT IN THIS PROGRAM SPENDS IN A SHOP OR LAB. PER WEEK.

OTIS SUPPLY FORM-1.

Figure A-4. OTIS Form 1 (1968-69 version)



OCCUPATIONAL TRAINING INFORMATION SYSTEM

1. NAME ______ ______ ______ (LAST, FIRST, MIDDLE) 2. AGE ______ 3. SEX (CHECK ONE) ☐ M ☐ F

4. ARE YOU MARRIED (CHECK ONE) ☐ YES ☐ NO 5. SOCIAL SECURITY NUMBER (IF ANY) ☐☐☐ ☐☐ ☐☐☐☐

6. PERMANENT ADDRESS (WHERE YOU CAN BE REACHED AFTER GRADUATION OR COMPLETION: PARENT'S HOME, ETC.)

______ (NUMBER AND STREET, CITY, TOWN, COMMUNITY, STATE, ZIP CODE)

7. ARE YOU THE HEAD OF A HOUSEHOLD? ☐ YES ☐ NO 8. ARE YOU PHYSICALLY HANDICAPPED? ☐ YES ☐ NO

9. WHAT IS THE NAME OF THE HIGH SCHOOL YOU ARE NOW ATTENDING OR LAST ATTENDED? (IF ANY) ______

10. LOCATION OF HIGH SCHOOL LAST ATTENDED ______ (CITY, TOWN, OR COMMUNITY, STATE)

11. WHAT PROGRAM ARE YOU NOW TAKING (EXAMPLE: VOCATIONAL CARPENTRY) ______

12. NAME OF SCHOOL OR INSTITUTION OFFERING THIS PROGRAM ______

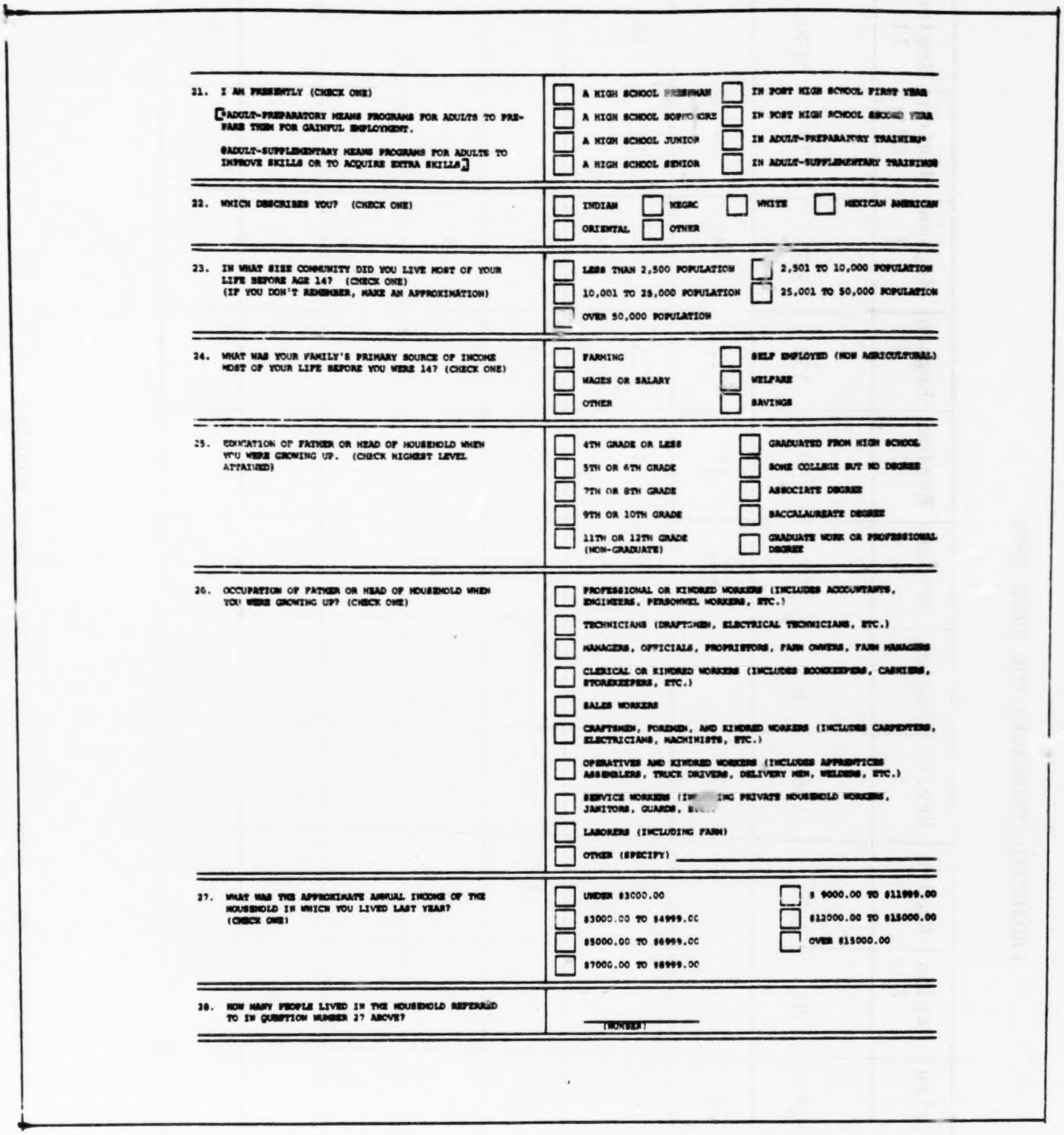
13. EXPECTED DATE OF GRADUATION OR COMPLETION FROM THIS PROGRAM ______ (MONTH, YEAR)

14. IN THIS PROGRAM, I AM NOW IN THE (CHECK ONE)	☐ FIRST YEAR ☐ SECOND YEAR ☐ THIRD YEAR ☐ FOURTH YEAR
15. WHO MOST INFLUENCED YOU TO ENROLL IN THIS PROGRAM? (CHECK ONE)	☐ RELATIVES ☐ HIGH SCHOOL PRINCIPAL ☐ HIGH SCHOOL COUNSELOR ☐ FRIENDS ☐ HIGH SCHOOL ACADEMIC TEACHER ☐ OTHER ☐ EMPLOYER ☐ VOCATIONAL TEACHER ☐ NOBODY
16. WHY DID YOU ENROLL IN THIS PROGRAM? (CHECK ONE)	☐ TO PREPARE FOR A JOB ☐ OTHER (SPECIFY) ______
17. HOW MANY YEARS OF SCHOOL DID YOU COMPLETE BEFORE ENTERING THIS PROGRAM?	ELEMENTARY OR HIGH SCHOOL ☐ 4 OR LESS ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 COLLEGE ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ MORE THAN 4
18. WHAT WERE YOU DOING BEFORE YOU FIRST ENROLLED IN THIS PROGRAM? (CHECK ONE)	☐ EMPLOYED FULL TIME (EXCEPT SUMMER EMPLOYMENT) ☐ GOING TO SCHOOL ☐ UNEMPLOYED (LOOKING FOR WORK) ☐ MILITARY ☐ OTHER
19. IF YOUR ANSWER TO QUESTION 18 WAS "EMPLOYED FULL TIME", WHAT WAS YOUR JOB CATAGORY? (CHECK ONE) (LEAVE BLANK OTHERWISE)	☐ PROFESSIONAL OR KINDRED WORKERS (INCLUDES ACCOUNTANTS, ENGINEERS, PERSONNEL WORKERS, ETC.) ☐ TECHNICIANS (DRAFTSMAN, ELECTRICAL TECHNICIAN, ETC.) ☐ MANAGERS, OFFICIALS, PROPRIETORS, FARM OWNERS, FARM MANAGERS ☐ CLERICAL WORKERS (INCLUDES BOOKKEEPERS, CASHIERS, STOREKEEPERS, ETC.) ☐ SALES WORKERS ☐ CRAFTSMAN, FOREMAN, AND KINDRED WORKERS (INCLUDES CARPENTERS, ELECTRICIANS, MACHINISTS, ETC.) ☐ OPERATIVES AND KINDRED WORKERS (INCLUDES APPRENTICES ASSEMBLERS, TRUCK DRIVERS, DELIVERY MEN, WELDERS, ETC.) ☐ SERVICE WORKERS (INCLUDING PRIVATE HOUSEHOLD, JANITORS, GUARDS, ETC.) ☐ LABORER, (INCLUDING FARM) ☐ OTHER (SPECIFY) ______
20. IF EMPLOYMENT OPPORTUNITIES ARE EQUAL, DO YOU PLAN TO WORK IN OKLAHOMA WHEN YOU FINISH THIS PROGRAM?	☐ YES ☐ NO ☐ DON'T KNOW

OTIS SUPPLY FORM-2

Figure A-5. OTIS Form 2 (1968-69 version)

(continued on next page)



21. I AM PRESENTLY (CHECK ONE) [*ADULT-PREPARATORY MEANS PROGRAMS FOR ADULTS TO PREPARE THEM FOR GAINFUL EMPLOYMENT. **ADULT-SUPPLEMENTARY MEANS PROGRAMS FOR ADULTS TO IMPROVE SKILLS OR TO ACQUIRE EXTRA SKILLS.]	☐ A HIGH SCHOOL FRESHMAN ☐ A HIGH SCHOOL SOPHOMORE ☐ A HIGH SCHOOL JUNIOR ☐ A HIGH SCHOOL SENIOR ☐ IN POST HIGH SCHOOL FIRST YEAR ☐ IN POST HIGH SCHOOL SECOND YEAR ☐ IN ADULT-PREPARATORY TRAINING* ☐ IN ADULT-SUPPLEMENTARY TRAINING
22. WHICH DESCRIBES YOU? (CHECK ONE)	☐ INDIAN ☐ NEGRO ☐ WHITE ☐ MEXICAN AMERICAN ☐ ORIENTAL ☐ OTHER
23. IN WHAT SIZE COMMUNITY DID YOU LIVE MOST OF YOUR LIFE BEFORE AGE 14? (CHECK ONE) (IF YOU DON'T REMEMBER, MAKE AN APPROXIMATION)	☐ LESS THAN 2,500 POPULATION ☐ 2,501 TO 10,000 POPULATION ☐ 10,001 TO 25,000 POPULATION ☐ 25,001 TO 50,000 POPULATION ☐ OVER 50,000 POPULATION
24. WHAT WAS YOUR FAMILY'S PRIMARY SOURCE OF INCOME MOST OF YOUR LIFE BEFORE YOU WERE 14? (CHECK ONE)	☐ FARMING ☐ WAGES OR SALARY ☐ OTHER ☐ SELF EMPLOYED (NON AGRICULTURAL) ☐ WELFARE ☐ SAVINGS
25. EDUCATION OF FATHER OR HEAD OF HOUSEHOLD WHEN YOU WERE GROWING UP. (CHECK HIGHEST LEVEL ATTAINED)	☐ 4TH GRADE OR LESS ☐ 5TH OR 6TH GRADE ☐ 7TH OR 8TH GRADE ☐ 9TH OR 10TH GRADE ☐ 11TH OR 12TH GRADE (NON-GRADUATE) ☐ GRADUATED FROM HIGH SCHOOL ☐ SOME COLLEGE BUT NO DEGREE ☐ ASSOCIATE DEGREE ☐ BACCALAUREATE DEGREE ☐ GRADUATE WORK OR PROFESSIONAL DEGREE
26. OCCUPATION OF FATHER OR HEAD OF HOUSEHOLD WHEN YOU WERE GROWING UP? (CHECK ONE)	☐ PROFESSIONAL OR KINDRED WORKERS (INCLUDES ACCOUNTANTS, ENGINEERS, PERSONNEL WORKERS, ETC.) ☐ TECHNICIANS (DRAFTSMEN, ELECTRICAL TECHNICIANS, ETC.) ☐ MANAGERS, OFFICIALS, PROPRIETORS, FARM OWNERS, FARM MANAGERS ☐ CLERICAL OR KINDRED WORKERS (INCLUDES BOOKKEEPERS, CASHIERS, STOREKEEPERS, ETC.) ☐ SALES WORKERS ☐ CRAFTSMEN, FOREMEN, AND KINDRED WORKERS (INCLUDES CARPENTERS, ELECTRICIANS, MACHINISTS, ETC.) ☐ OPERATIVES AND KINDRED WORKERS (INCLUDES APPRENTICES ASSEMBLERS, TRUCK DRIVERS, DELIVERY MEN, WELDERS, ETC.) ☐ SERVICE WORKERS (INCLUDING PRIVATE HOUSEHOLD WORKERS, JANITORS, GUARDS, ETC.) ☐ LABORERS (INCLUDING FARM) ☐ OTHER (SPECIFY) ____________
27. WHAT WAS THE APPROXIMATE ANNUAL INCOME OF THE HOUSEHOLD IN WHICH YOU LIVED LAST YEAR? (CHECK ONE)	☐ UNDER $3000.00 ☐ $3000.00 TO $4999.00 ☐ $5000.00 TO $6999.00 ☐ $7000.00 TO $8999.00 ☐ $ 9000.00 TO $11999.00 ☐ $12000.00 TO $15000.00 ☐ OVER $15000.00
28. HOW MANY PEOPLE LIVED IN THE HOUSEHOLD REFERRED TO IN QUESTION NUMBER 27 ABOVE?	____________ (NUMBER)

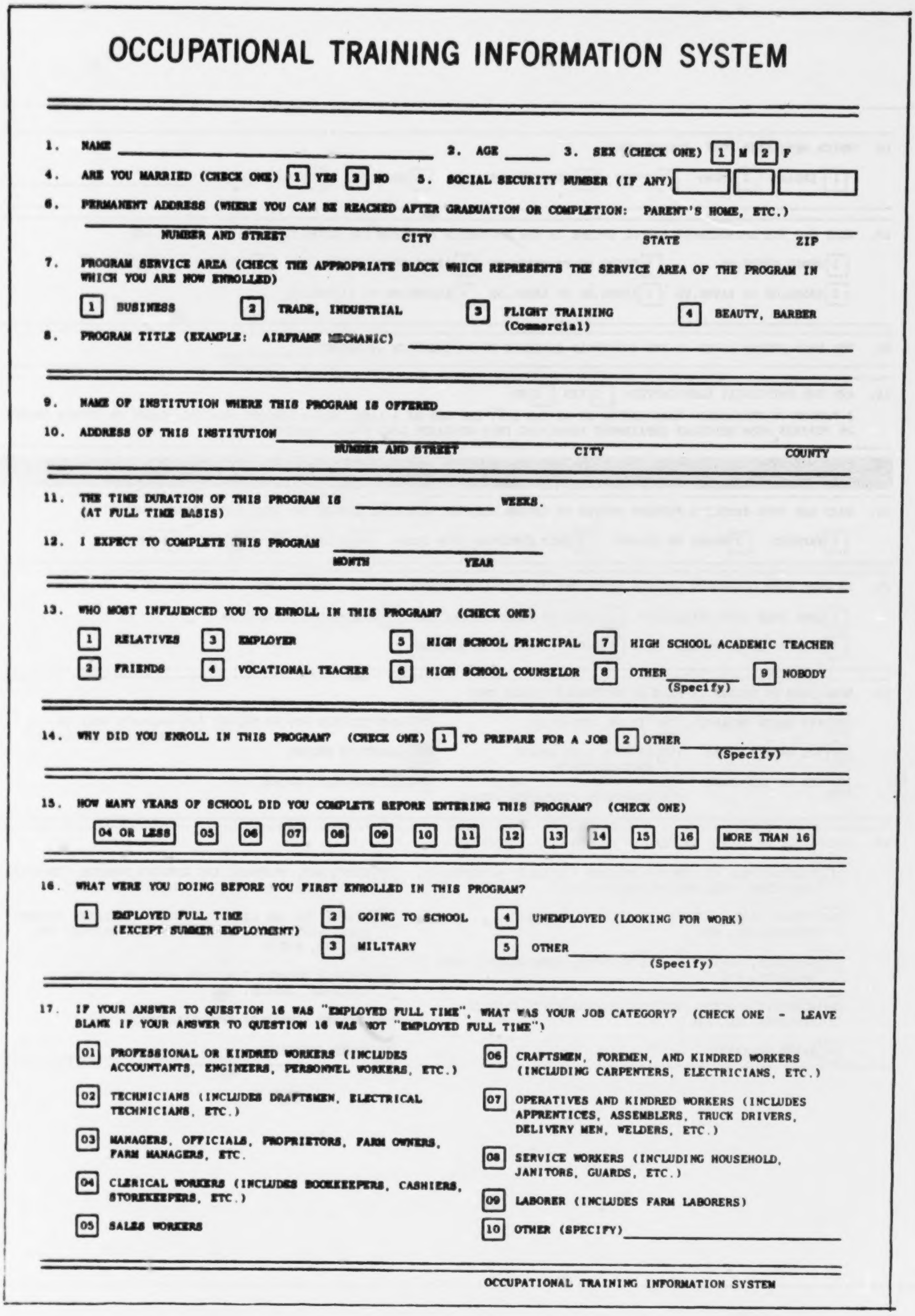
Figure A-5. OTIS Form 2 (1968-69 version)

HOME ECONOMICS EDUCATION

PROJECTED GRADUATES FOR JUNE 1970

Program Type	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8	Region 9	Region 10	Region 11
090100 - Homemaking - Preparation for Personal Home and Family Living	608	396	631	456	361	307	359	551	675	377	130
090201 - Care and Guidance of Children	13					22	11	22	10	14	
090202 - Clothing Management and Production	16		8	21		14	4	20	3	11	10
090203 - Food Management Production and Services	1	15	11	15		10	26	20	3		
090299 - Occupational Orientation	7	5	19	10			9		3		

Figure A-6. Form S-1 (Full time student supply)



OCCUPATIONAL TRAINING INFORMATION SYSTEM

1. NAME ______________ 2. AGE _____ 3. SEX (CHECK ONE) ☐ 1 M ☐ 2 F

4. ARE YOU MARRIED (CHECK ONE) ☐ 1 YES ☐ 2 NO 5. SOCIAL SECURITY NUMBER (IF ANY) ☐ ☐ ☐

6. PERMANENT ADDRESS (WHERE YOU CAN BE REACHED AFTER GRADUATION OR COMPLETION: PARENT'S HOME, ETC.)

____
NUMBER AND STREET CITY STATE ZIP

7. PROGRAM SERVICE AREA (CHECK THE APPROPRIATE BLOCK WHICH REPRESENTS THE SERVICE AREA OF THE PROGRAM IN WHICH YOU ARE NOW ENROLLED)

☐ 1 BUSINESS ☐ 2 TRADE, INDUSTRIAL ☐ 3 FLIGHT TRAINING (Commercial) ☐ 4 BEAUTY, BARBER

8. PROGRAM TITLE (EXAMPLE: AIRFRAME MECHANIC) ______________

9. NAME OF INSTITUTION WHERE THIS PROGRAM IS OFFERED ______________

10. ADDRESS OF THIS INSTITUTION ______________
NUMBER AND STREET CITY COUNTY

11. THE TIME DURATION OF THIS PROGRAM IS ________ WEEKS.
(AT FULL TIME BASIS)

12. I EXPECT TO COMPLETE THIS PROGRAM ______________
MONTH YEAR

13. WHO MOST INFLUENCED YOU TO ENROLL IN THIS PROGRAM? (CHECK ONE)

☐ 1 RELATIVES ☐ 3 EMPLOYER ☐ 5 HIGH SCHOOL PRINCIPAL ☐ 7 HIGH SCHOOL ACADEMIC TEACHER
☐ 2 FRIENDS ☐ 4 VOCATIONAL TEACHER ☐ 6 HIGH SCHOOL COUNSELOR ☐ 8 OTHER ________ (Specify) ☐ 9 NOBODY

14. WHY DID YOU ENROLL IN THIS PROGRAM? (CHECK ONE) ☐ 1 TO PREPARE FOR A JOB ☐ 2 OTHER ________ (Specify)

15. HOW MANY YEARS OF SCHOOL DID YOU COMPLETE BEFORE ENTERING THIS PROGRAM? (CHECK ONE)

☐ 04 OR LESS ☐ 05 ☐ 06 ☐ 07 ☐ 08 ☐ 09 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐ MORE THAN 16

16. WHAT WERE YOU DOING BEFORE YOU FIRST ENROLLED IN THIS PROGRAM?

☐ 1 EMPLOYED FULL TIME (EXCEPT SUMMER EMPLOYMENT) ☐ 2 GOING TO SCHOOL ☐ 4 UNEMPLOYED (LOOKING FOR WORK)
☐ 3 MILITARY ☐ 5 OTHER ________ (Specify)

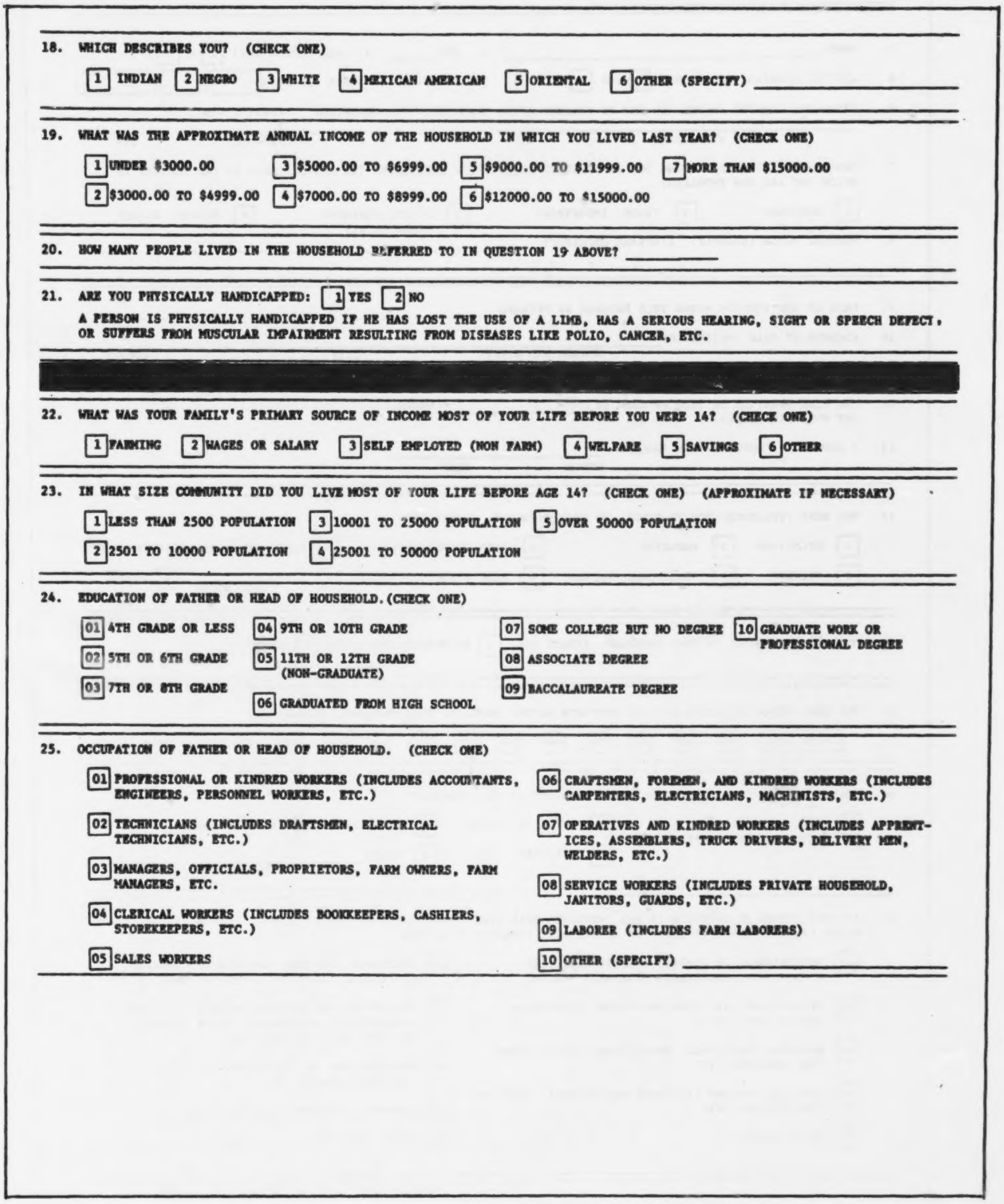
17. IF YOUR ANSWER TO QUESTION 16 WAS "EMPLOYED FULL TIME", WHAT WAS YOUR JOB CATEGORY? (CHECK ONE - LEAVE BLANK IF YOUR ANSWER TO QUESTION 16 WAS NOT "EMPLOYED FULL TIME")

☐ 01 PROFESSIONAL OR KINDRED WORKERS (INCLUDES ACCOUNTANTS, ENGINEERS, PERSONNEL WORKERS, ETC.)
☐ 02 TECHNICIANS (INCLUDES DRAFTSMEN, ELECTRICAL TECHNICIANS, ETC.)
☐ 03 MANAGERS, OFFICIALS, PROPRIETORS, FARM OWNERS, FARM MANAGERS, ETC.
☐ 04 CLERICAL WORKERS (INCLUDES BOOKKEEPERS, CASHIERS, STOREKEEPERS, ETC.)
☐ 05 SALES WORKERS
☐ 06 CRAFTSMEN, FOREMEN, AND KINDRED WORKERS (INCLUDING CARPENTERS, ELECTRICIANS, ETC.)
☐ 07 OPERATIVES AND KINDRED WORKERS (INCLUDES APPRENTICES, ASSEMBLERS, TRUCK DRIVERS, DELIVERY MEN, WELDERS, ETC.)
☐ 08 SERVICE WORKERS (INCLUDING HOUSEHOLD, JANITORS, GUARDS, ETC.)
☐ 09 LABORER (INCLUDES FARM LABORERS)
☐ 10 OTHER (SPECIFY) ______________

OCCUPATIONAL TRAINING INFORMATION SYSTEM

Figure A-7. OTIS Form 2 - For Private Schools

(continued on next page)



18. WHICH DESCRIBES YOU? (CHECK ONE)

[1] INDIAN [2] NEGRO [3] WHITE [4] MEXICAN AMERICAN [5] ORIENTAL [6] OTHER (SPECIFY) ______________

19. WHAT WAS THE APPROXIMATE ANNUAL INCOME OF THE HOUSEHOLD IN WHICH YOU LIVED LAST YEAR? (CHECK ONE)

[1] UNDER $3000.00 [3] $5000.00 TO $6999.00 [5] $9000.00 TO $11999.00 [7] MORE THAN $15000.00

[2] $3000.00 TO $4999.00 [4] $7000.00 TO $8999.00 [6] $12000.00 TO $15000.00

20. HOW MANY PEOPLE LIVED IN THE HOUSEHOLD REFERRED TO IN QUESTION 19 ABOVE? __________

21. ARE YOU PHYSICALLY HANDICAPPED: [1] YES [2] NO

A PERSON IS PHYSICALLY HANDICAPPED IF HE HAS LOST THE USE OF A LIMB, HAS A SERIOUS HEARING, SIGHT OR SPEECH DEFECT, OR SUFFERS FROM MUSCULAR IMPAIRMENT RESULTING FROM DISEASES LIKE POLIO, CANCER, ETC.

22. WHAT WAS YOUR FAMILY'S PRIMARY SOURCE OF INCOME MOST OF YOUR LIFE BEFORE YOU WERE 14? (CHECK ONE)

[1] FARMING [2] WAGES OR SALARY [3] SELF EMPLOYED (NON FARM) [4] WELFARE [5] SAVINGS [6] OTHER

23. IN WHAT SIZE COMMUNITY DID YOU LIVE MOST OF YOUR LIFE BEFORE AGE 14? (CHECK ONE) (APPROXIMATE IF NECESSARY)

[1] LESS THAN 2500 POPULATION [3] 10001 TO 25000 POPULATION [5] OVER 50000 POPULATION

[2] 2501 TO 10000 POPULATION [4] 25001 TO 50000 POPULATION

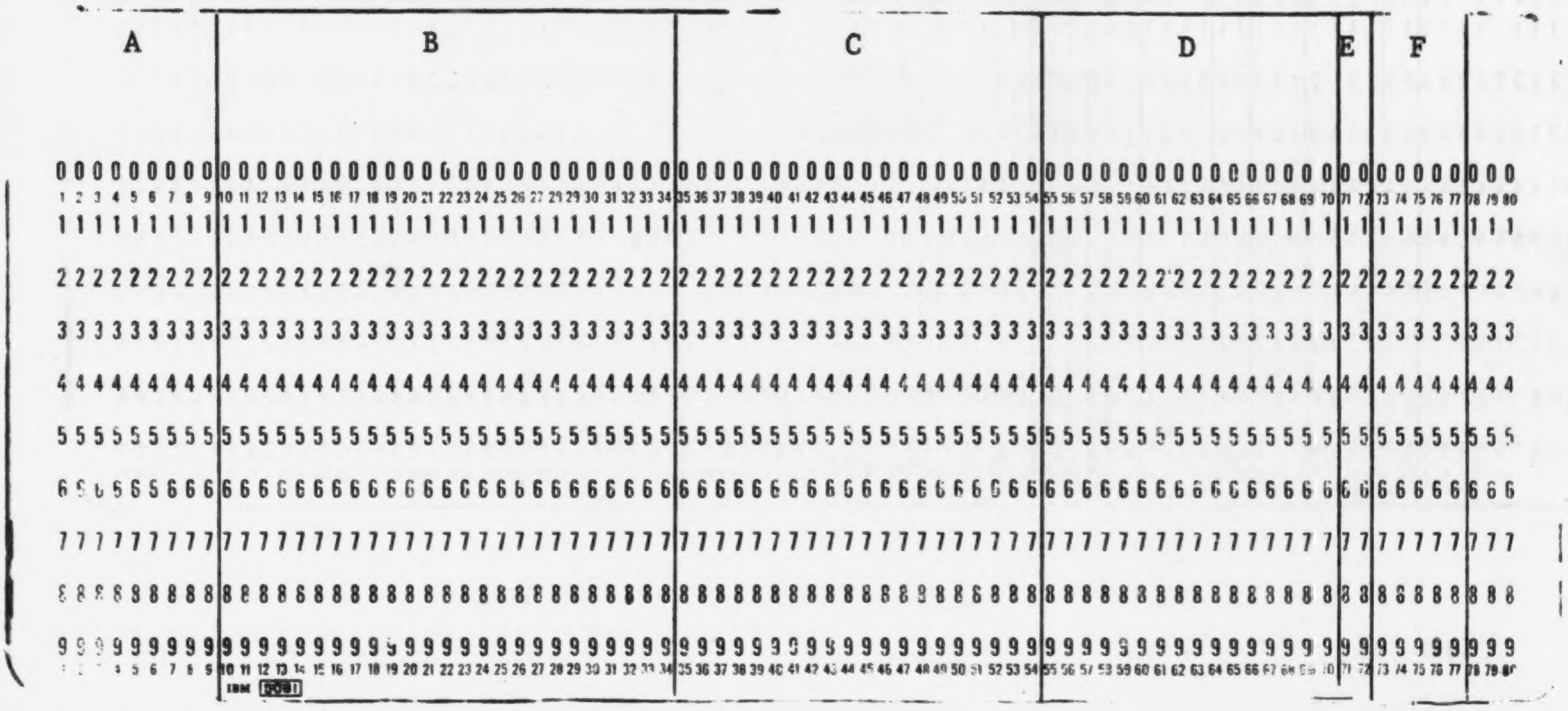
24. EDUCATION OF FATHER OR HEAD OF HOUSEHOLD. (CHECK ONE)

[01] 4TH GRADE OR LESS
[02] 5TH OR 6TH GRADE
[03] 7TH OR 8TH GRADE
[04] 9TH OR 10TH GRADE
[05] 11TH OR 12TH GRADE (NON-GRADUATE)
[06] GRADUATED FROM HIGH SCHOOL
[07] SOME COLLEGE BUT NO DEGREE
[08] ASSOCIATE DEGREE
[09] BACCALAUREATE DEGREE
[10] GRADUATE WORK OR PROFESSIONAL DEGREE

25. OCCUPATION OF FATHER OR HEAD OF HOUSEHOLD. (CHECK ONE)

[01] PROFESSIONAL OR KINDRED WORKERS (INCLUDES ACCOUNTANTS, ENGINEERS, PERSONNEL WORKERS, ETC.)
[02] TECHNICIANS (INCLUDES DRAFTSMEN, ELECTRICAL TECHNICIANS, ETC.)
[03] MANAGERS, OFFICIALS, PROPRIETORS, FARM OWNERS, FARM MANAGERS, ETC.
[04] CLERICAL WORKERS (INCLUDES BOOKKEEPERS, CASHIERS, STOREKEEPERS, ETC.)
[05] SALES WORKERS
[06] CRAFTSMEN, FOREMEN, AND KINDRED WORKERS (INCLUDES CARPENTERS, ELECTRICIANS, MACHINISTS, ETC.)
[07] OPERATIVES AND KINDRED WORKERS (INCLUDES APPRENTICES, ASSEMBLERS, TRUCK DRIVERS, DELIVERY MEN, WELDERS, ETC.)
[08] SERVICE WORKERS (INCLUDES PRIVATE HOUSEHOLD, JANITORS, GUARDS, ETC.)
[09] LABORER (INCLUDES FARM LABORERS)
[10] OTHER (SPECIFY) ______________

Figure A-7. OTIS Form 2 - For Private Schools

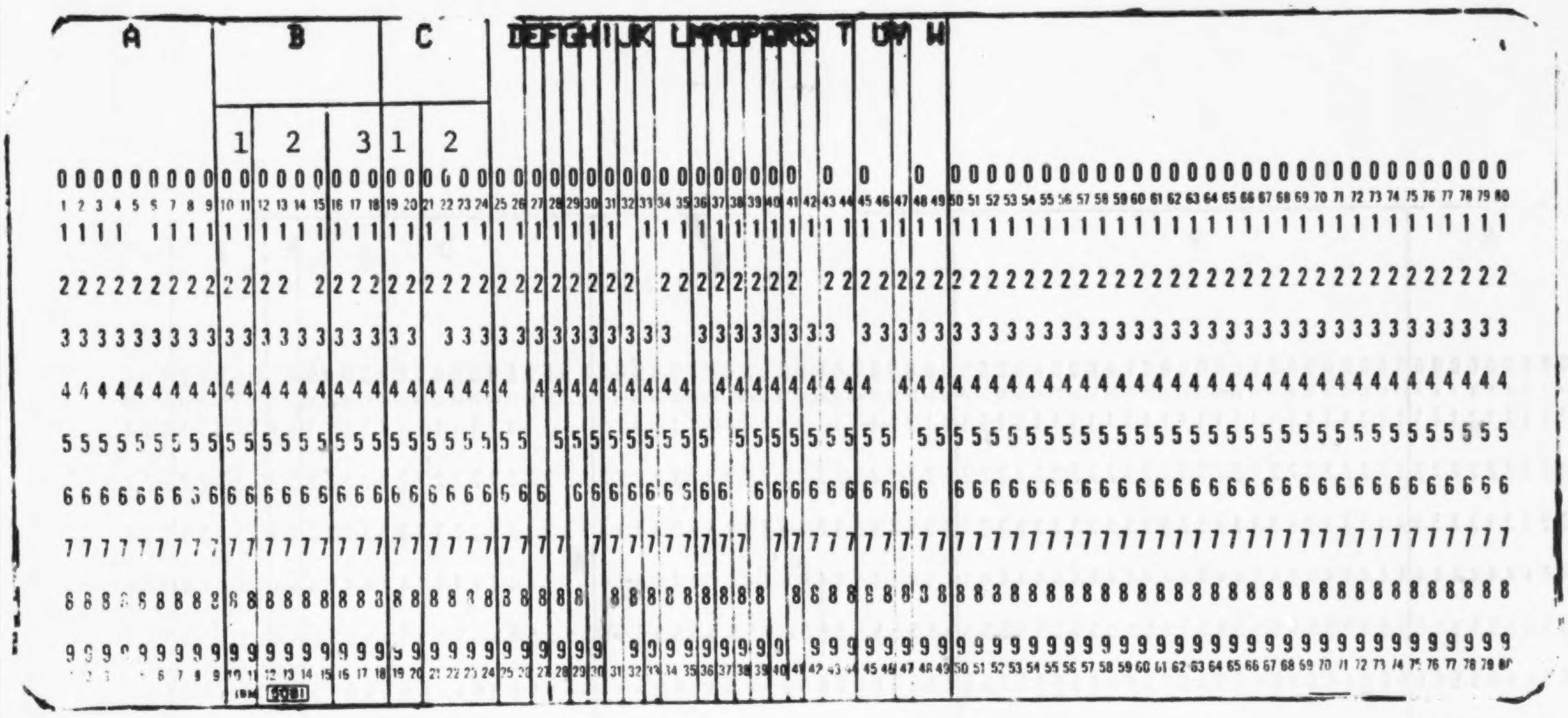


Card 'A'

A. ID Number or Social Security Number
B. Student Name
C. Number and Street
D. City
E. State
F. Zip Code

Figure A-8. Supply Data Card (A Card)

- Continued on Next Page -



Card 'B'

A. ID Number or Social Security Number
B. School Code
    1. County Code
    2. District Code
    3. Site Code
C. Program Code
    1. Program Service Division
    2. Program Type
D. Age
E. Sex
F. Marital Status
G. Head of Household?
H. Physically Handicapped?
I. Year in Program
J. Who Influenced Entry into Program
K. Why Enrolled
L. Previous Education
M. What Were You Doing Previously
N. Previous Job
O. Do You Plan to Stay in Oklahoma
P. Type of Student (Adult, etc.)!
Q. Race
R. Size of Home Community
S. Source of Family Income
T. Education of Father
U. Father's Job Type
V. Family Income
W. Family Size

Figure A-8. Supply Data Card
(B Card)

ID or SS Number if Avail.	Name Name	Street and Number	City	State	Zip Code	School Code		
						Coty	Dist	Site
1 9	10 34	35 54	55 70	71 72	73 77	78 79	80 83	84 86

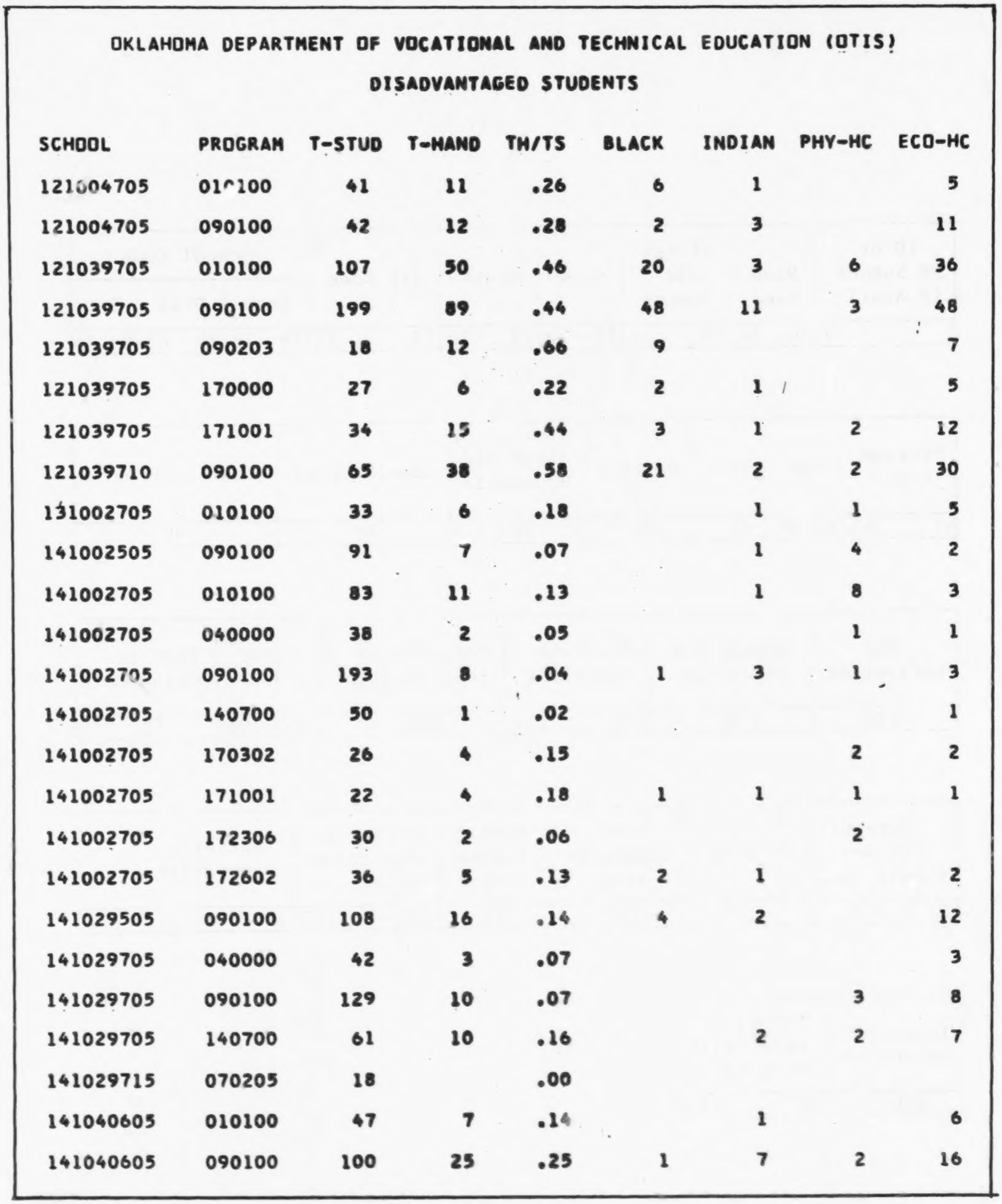
Program Code	Age	Sex	Married	Head of Household	Handicapped	Year in Program
87 92	93 94	95	96	97	98	99

Who Influenced	Reason For Enrolling	Previous Schooling	Doing Prior to Enrollment	Prior Job	Stay in Oklahoma
100	101	102 103	104	105 106	107

Type of Student (Adult, etc.)	Race	Home Community Size	Family Income Source	Father's Education Level	Father's Occupation
117 118	109	110	111	112 113	114 115

Income of Household	Number of Persons in Household
116	117 118

Figure A-9. Student Characteristics Tape



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      OKLAHOMA DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION (OTIS)
                          DISADVANTAGED STUDENTS

SCHOOL      PROGRAM  T-STUD  T-HAND  TH/TS  BLACK  INDIAN  PHY-HC  ECO-HC
121004705   010100     41      11     .26     6      1               5
121004705   090100     42      12     .28     2      3              11
121039705   010100    107      50     .46    20      3       6      36
121039705   090100    199      89     .44    48     11       3      48
121039705   090203     18      12     .66     9                      7
121039705   170000     27       6     .22     2      1               5
121039705   171001     34      15     .44     3      1       2      12
121039710   090100     65      38     .58    21      2       2      30
131002705   010100     33       6     .18            1       1       5
141002505   090100     91       7     .07            1       4       2
141002705   010100     83      11     .13            1       8       3
141002705   040000     38       2     .05                    1       1
141002705   090100    193       8     .04     1      3       1       3
141002705   140700     50       1     .02                            1
141002705   170302     26       4     .15                    2       2
141002705   171001     22       4     .18     1      1       1       1
141002705   172306     30       2     .06                    2
141002705   172602     36       5     .13     2      1               2
141029505   090100    108      16     .14     4      2              12
141029705   040000     42       3     .07                            3
141029705   090100    129      10     .07                    3       8
141029705   140700     61      10     .16            2       2       7
141029715   070205     18             .00
141040605   010100     47       7     .14            1               6
141040605   090100    100      25     .25     1      7       2      16
```

Figure A-10 Disadvantaged Report
(Sample Page)

TABLE II

AVERAGE AGE OF STUDENTS

Vocational Agriculture	Distributive Education	Health Education	Home Economics	Office Education	Technical Education	Trade/Industrial Education	All Programs
15.50	16.50	25.77	15.29	17.59	19.12	17.09	16.64

TABLE III

AVERAGE SIZE OF STUDENT'S FAMILY

Vocational Agriculture	Distributive Education	Health Education	Home Economics	Office Education	Technical Education	Trade/Industrial Education	All Programs
5.13	4.68	4.32	5.22	4.57	4.34	4.80	5.02

Figure A-11. Sample Page from Student Characteristics Report

APPENDIX A-1

PROGRAM DESCRIPTIONS

AGRICULTURE

01.00 00

Agriculture is comprised of the group of related courses or units of subject matter which are organized for carrying on learning experiences concerned with developing knowledge, understanding, and skills involved in preparation for or upgrading in occupations requiring knowledge and skills in agricultural subjects. The functions of production agriculture, agricultural supplies, agricultural mechanization, agricultural products (processing), ornamental horticulture, and the services related thereto, are emphasized in the instruction designed to provide opportunities for pupils to prepare for or improve their competencies in agricultural occupations. An agricultural occupation may include one or any combination of these functions.

Where there are Future Farmers of America (FFA) Chapters and related leadership training and supervised occupational experience programs they are important instructional media and are highly significant integral activities which aid agricultural education in making contributions to the guidance and total general educational development of pupils. The Future Farmers of America and related leadership training permeate every aspect of the instructional program in agriculture.

Included in this subject-matter area are the items of information which identify various aspects of agriculture.

01.01 00 AGRICULTURAL PRODUCTION - Subject matter and learning activities which are concerned with the principles and processes involved in the planning related to and the economic use of facilities, land, machinery, chemicals, finance, and labor in the production of plant and animal products. In practice, activities include classroom instruction and laboratory experiences, in and out of school, including farms and other agriculturally related establishments. Aspects of production agriculture are organized under a variety of descriptive titles, such as Animal Science, Plant Science, Farm Mechanics, Farm Business Management, and Other Production Agriculture.

01.02 00 AGRICULTURAL SUPPLIES - Subject matter and learning experiences concerned with preparing pupils for occupations involved in providing consumable supplies used in the production phase of agriculture--including processing, marketing, consulting, and other services. Various aspects of agricultural supplies are organized under descriptive titles such as those which follow.

01.03 00 AGRICULTURAL MECHANICS - A combination of subject matter and activities designed to develop abilities necessary for assisting with and/or performing the common and important operations or processes involved in the selection, operation, maintenance, and use of agricultural power, agricultural machinery and equipment, structures and utilities, soil and water management, and agricultural mechanics shop, including sales and services.

01.04 00 AGRICULTURAL PRODUCTS (Processing, Inspection and Management) - A combination of subject matter and learning experiences designed to teach information, processes, scientific principles, and management decisions concerned with agricultural competencies in the food and non-food technology occupations. The groups of food products include (1) meat, fish, poultry and eggs; (2) dairy products; (3) fruits and vegetables; (4) cereal grains; and (5) other foods and beverages. The non-food products include cotton, tobacco, and wool. Instruction may be provided in any or all groups of these products.

01.05 00 ORNAMENTAL HORTICULTURE (Production, Processing, Marketing, and Services) - Organized subject matter and practical experiences concerned with the culture of plants used principally for ornamental or establishing, maintaining, and managing ornamental horticulture enterprises. Subject matter and experiences are organized under descriptive titles such as Arboriculture, Floriculture, Greenhouse Operation and Management, Landscaping, Nursery Operation and Management, Turf Management, and other ornamental horticulture.

01.07 00 FORESTRY - A combination of subject matter and experiences concerned with forests as living communities of plants and animals in which trees are the dominant species. Emphasis is on the multiple use of forest lands and resources.

01.90 001 HORSE SHOEING - Training designed to enable individual to forge metal bars into horse shoe and fit and nail shoe to hooves of horses and mules, using calipers and hand tools. The individual removes defective shoes; trims and shapes hoof; prepares shoe for positioning and positions and nails shoe on hoof.

DISTRIBUTIVE EDUCATION
(DISTRIBUTION AND MARKETING)

04.00 00

Distributive education (distribution and marketing) includes various combinations of subject matter and learning experiences related to the performance of activities that direct the flow of goods and services, including their appropriate utilization, from the producer to the consumer or user. These activities include buying, selling, transportation, storage, marketing research and communications, marketing finance, and risk management.

Distributive education is a program of occupational instruction in the field of distribution and marketing. It is designed to prepare individuals to enter, to progress, or to improve competencies in distributive occupations. Emphasis is on the development of attitudes, skills, and understanding related to marketing, merchandising, and management. Instruction is offered at the secondary, post-secondary, and adult education levels. Distributive occupations are found in such businesses as retail and wholesale trade; finance, insurance and real estate; services and service trades; manufacturing; transportation and utilities; and communications.

04.17 00 REAL ESTATE - Organized subject matter and learning experiences related to tasks performed by persons who act for themselves or as agents for others in real estate brokerages or other firms engaged in buying, selling, appraising, renting, managing, and leasing of real property.

HEALTH OCCUPATIONS EDUCATION

07.00 00

Education for health occupations comprises the body of related subject matter, or the body of related courses, and planned experiences designed to impart knowledge and develop understandings and skills required in the supportive services to the health professions. Instruction is organized to prepare pupils for occupational objectives concerned with assisting qualified personnel in providing diagnostic, therapeutic, preventive, restorative, and rehabilitative services to people, including understandings and skills essential to care and health services to patients.

Education for health workers usually is conducted by recognized education agencies and appropriate health institutions and services that can make available the quality and kind of experiences needed by the trainee in developing the competencies required for his occupational goal.

Instructional programs which prepare persons for occupations that render health services directly to patients (people) provide planned clinical instruction and experience in appropriate clinical situations. For those occupations that render health services which do not involve direct services to patients, planned instruction and experience in laboratories and/or appropriate work situations are provided as an integral part of the instructional program.

07.01 01 DENTAL ASSISTANT (Dental Office Assistant) - A combination of subject matter and experiences designed to prepare a person to assist the dentist at the chairside in the dental operatory, to perform reception and clerical functions, and to carry out selected dental laboratory work.

07.02 01 CYTOLOGY TECHNICIAN (Cytotechnologist) - A combination of subject matter and experiences designed to prepare a person to stain and screen smeared slides for determination of abnormalities of exfoliated cells that may assist in the diagnosis of cancer. This work is performed under the supervision of a physician.

07.02 03 MEDICAL LABORATORY ASSISTANT - A combination of subject matter and experiences organized to prepare a person to work under the supervision of medical technologists, clinical pathologists, or physicians to perform routine clinical laboratory procedures. (Included as 16.03 02 00 00 Medical Laboratory Assistant under TECHNICAL EDUCATION.)

07.02 09 INHALATION THERAPY TECHNICIAN - Preparation includes a combination of subject matter and experiences designed to prepare a person to perform procedures and operate and maintain equipment used in supporting respiratory functions, including the administration of oxygen and other sustaining gases, as directed by a physician.

07.02 11 MEDICAL X-RAY TECHNICIAN (Radiologic Technologist) - A combination of subject matter and experiences designed to prepare a person for the safe use of X-ray equipment in both laboratory and clinical settings under the supervision of a radiologist or other physician. (Included as 16.03 03 00 00 Medical X-ray Technician (Radiologic Technician) under TECHNICAL EDUCATION.)

07.03 01 NURSE, ASSOCIATE DEGREE - A combination of general and nursing education and clinical experiences designed to prepare the persons to work with the nurse supervisor, the physician, and other members of the health team in providing nursing care. (Included as 16.03 04 00 00 Nurse, Associate Degree under TECHNICAL EDUCATION.)

07.03 02 PRACTICAL (Vocational) NURSE - A combination of subject matter and supervised clinical experiences designed to prepare a person to give direct nursing care under the supervision of a nurse or physician.

07.03 03 NURSE' AIDE - A combination of subject matter and experiences which prepares a person to perform simple tasks involved in the personal care of individuals receiving nursing services. These tasks are performed under the supervision of a nurse.

07.03 05 SURGICAL TECHNICIAN (Operating Room Technician) - A combination of subject matter and experiences designed to prepare a person to serve as a general technical assistant on the surgical team in the operating suite.

07.09 04 MEDICAL ASSISTANT (Medical Office Assistant) - A combination of subject matter and experiences designed to prepare a person to perform functions and follow procedures concerned with diagnosis and treatment of patients in a physician's office. Instruction includes physical examinations, laboratory tests, x-rays, measurements, and medications.

07.09 10 ORTHOPEDIC TECHNICIAN - A combination of subject matter and experiences designed to prepare a person to assist an orthopedic specialist in preserving, restoring, and developing the form and function of the extremities, spine, and associated sturctures by medical, surgical, and physical methods.

07.99 00 HEALTH SERVICE OCCUPATIONS - Include here other subject matter and experiences emphasized in Health Occupations Education, which are not listed or classifiable above. (Specify).

07.99 01 WARD CLERK - Training is designed to enable individuals to work in a patient care unit under the supervision of the professional nurse and/or unit manager. Individual acts as receptionist, answers telephone, directs visitors, assembles charts, records routine data on patient charts, handles incoming and out going communications, orders supplies and equipment, coordinates activities with other hospital divisions, fills out reports and service requests, performs many phases of clerical duties which do not require the services of a health professional.

07.99 02 MEDICAL RECORD CLERK - Works under the supervision of a qualified medical record librarian or medical records technician. Responsible for general clerical duties, such as, recording typing, and filing of medical records information. Clerifies medical records of hospital patients and compiles statistics for use in reports and surveys.

HOME ECONOMICS

09.00 00

Home economics comprises the group of related courses or units of instruction organized for purposes of enabling pupils to acquire knowledge and develop understanding, attitudes, and skills relevant to (a) personal, home and family life, and (b) occupational preparation using the knowledge and skills of home economics. The subject matter of home economics includes, in addition to that which is unique to the area, concepts drawn from the natural and social sciences and the humanities. The following descriptive headings identify the various aspects of home economics.

09.01 00 HOME ECONOMICS (Useful) - The courses or units of instruction in home economics which emphasize acquisition of knowledge and the development of understandings, attitudes, and skills relevant to personal, home, and family life in the areas described below.

09.02 01 CARE AND GUIDANCE OF CHILDREN - Preparation for various kinds of employment related to child care centers and young children, e.g., assisting directors of child day-care centers or nursery schools, assisting with activities on playgrounds and in recreation centers, and caring for children in stores and airports.

09.02 02 CLOTHING MANAGEMENT, PRODUCTION, AND SERVICES - Preparation for employment concerned with clothing and textiles, e.g., fitting and altering ready-made garments, custom tailoring and dressmaking, laundry-dry cleaning work, demonstration work, and technical work in business and industry.

09.02 03 FOOD MANAGEMENT, PRODUCTION, AND SERVICES - Preparation for various kinds of employment related to institutional and commercial food services. Employment may include workers and supervisors in hospitals, child day-care centers, homes for the elderly, and school lunch programs, and demonstrators and technicians in the food industries.

OFFICE OCCUPATIONS

14.00 00

This body of subject matter, or combinations of courses and practical experience, is organized into programs of instruction to provide opportunities for pupils to prepare for and achieve career objectives in selected office occupations. In the instructional process various aspects of subject matter frequently are drawn from other subject-matter areas. Learning experiences are designed to lead to employment and/or advancement of individuals in occupations in public or private enterprises or organizations related to the facilitating function of the office. Included is a variety of activities, such as recording and retrieval of data, supervision and coordination of office activities, internal and external communication, and the reporting of information. Under this heading are the items of information which identify categories of career objectives in office occupations, and around which courses and practical experiences are developed.

14.01 01 ACCOUNTANTS - Occupations concerned with the paraprofessional duties supporting the accountant in organizing designing, and controlling numerical and financial data. (D.O.T. No. 160. series)

14.02 02 KEYPUNCH OPERATORS AND PERIPHERAL EQUIPMENT OPERATORS (Unit Record)- Programs concerned with the operation of equipment which is auxiliary or peripheral to the operation of the electronic data computer. Included are the operations of card-to-tape converters, tape-to-card converters, high speed printers, and related equipment.

14.03 03 GENERAL OFFICE CLERK - Programs concerned with performing a variety of clerical duties utilizing knowledge of systems and reports, including copying data, and compiling records and reports; tabulating and posting data in record books; providing information and conducting interviews; operating office machines; and handling mail and correspondence.

14.07 02 SECRETARIES - Learning activities and experiences related to occupations concerned with carrying out administrative and general office duties in addition to taking and transcribing dictation. (D.O.T. No. 201.

14.07 03 STENOGRAPHERS - Learning activities and experiences to occupations concerned with taking shorthand or special writing of notes by hand or machine and transcribing them. (D.O.T. No. 202. series)

TECHNICAL EDUCATION

16.00 00

Technical education is concerned with that body of knowledge organized in a planned sequence of classroom and laboratory experiences usually at the post-secondary level to prepare pupils for a cluster of

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job opportunities in a specialized field of technology. The program of instruction normally includes the study of the underlying sciences and supporting mathematics inherent in a technology; and of the methods, skills, materials, and processes commonly used and services performed in the technology. A planned sequence of study and extensive knowledge in a field of specialization is required in technical education, including competency in the basic communication skills and related general education. Technical education prepares for the occupational area between the skilled craftsman and the professional person such as the doctor, the engineer, and the scientist.

The technical education curriculum must be so structured that it prepares the graduate to enter a job and be productive with a minimum of additional training after employment, provides a background of knowledge and skills which will enable him to advance with the developments in the technology, and enables him, with a reasonable amount of experience and additional education, to advance into positions of increased responsibility.

The technician frequently is employed in direct support of the professional employee. For example, the engineering technician will be capable of performing such duties as assisting in the following engineering functions: designing, developing, testing, modifying of products and processes, production planning, writing reports, and preparing estimates; analyzing and diagnosing technical problems that involve independent decisions; and solving a wide range of technical problems by applying his background in the technical specialties--science, mathematics, and communicative and citizenship skills.

16.01 01 AERONAUTICAL TECHNOLOGY - A planned program of classroom and laboratory experiences, including mathematics, the physical sciences, and a combination of aerodynamics, structures, materials, and electronics as applied to the design, testing, and development of aircraft. This program is designed to produce the ability to understand the propulsion, control, and guidance system of the airplane, and to collect pertinent engineering data in a research-and-development activity. This program prepares the graduate to work in direct support of the engineer in the aerospace industry.

16.01 03 ARCHITECTURAL TECHNOLOGY (Building Construction) - A program of instruction designed to provide the pupil with knowledge and understanding of scientific principles, mathematical concepts, and communicative and technical skills combined with laboratory experiences including creative design, testing, and model building which will enable him to be supportive to the architect and the architectural engineer. The subject matter is concerned with design, estimating, inspection, supervision, and contacts and specifications--primarily in the field of building construction--with emphasis on the art of form.

16.01 05 CHEMICAL TECHNOLOGY - A program of instruction designed to provide the pupil with knowledge of scientific principles, mathematical concepts, and communicative and technical skills combined with appropriate laboratory experiences which will enable him to be supportive to the chemical engineer. The subject matter emphasizes qualitative, quantitative, and analytical analyses in general and organic chemistry. In the unit-operation laboratory he studies material handling, crushing, sizing. By pilot-plant operation he studies the machinery and methods used in extraction, distillation, evaporation, drying, absorption, and heat transfer in chemical technology. He designs, installs, and operates pilot plants for chemical manufacturing processes.

16.01 06 CIVIL TECHNOLOGY - A planned program of classroom and laboratory experiences including the study of physical sciences, mathematics, surveying, strength of materials, and other specialty courses leading to preparation for designing, testing, and supervising the construction of highways railroads, airports, bridges, harbors, irrigation works, sanitary plants, and other structures. The graduate works in direct support of the civil engineer.

16.01 07 ELECTRICAL TECHNOLOGY - An organization of subject matter and laboratory experiences designed to provide preparation in specialty courses, physical sciences, mathematics, and general education as applied to the design, development, and testing of electrical circuits, devices, and systems for generating electricity, and the distribution and utilization of electrical power. These electrical systems incorporate and require knowledge about the application of electronic and instrumentation devices.

The program is designed to develop in the individual the capacity to perform in such areas as: model and prototype development and testing; systems analysis and integration including design, selection, installation, calibration, and testing; development of corrective and preventive maintenance techniques; application of engineering data; and the preparation of reports and test results in support of the electrical engineer.

16.01 08 ELECTRONICS TECHNOLOGY - Subject matter and laboratory experiences organized to provide preparation in the specialty courses, physical science, mathematics, and general education concerned with the design, development, modification, and testing of electronic circuits, devices and systems. Subject matter incorporates solid state and microminiaturization devices and representative systems such as microwave systems, computers, and controls.

The program is designed to develop in the individual the capacity to perform in such areas as: practical circuit feasibility; prototype development and testing; development of maintenance techniques; systems analysis including design, selection, installation, calibration, and testing; and the application of engineering data and preparation of reports and test results in support of the professional personnel in the electronics field.

16.01 11 INDUSTRIAL TECHNOLOGY - A program of instruction designed to develop knowledge and understanding of scientific principles, mathematical concepts, and communicative and technical skills, combined with appropriate laboratory experiences which will prepare the pupil to be supportive to the industrial engineering in production and planning. The subject matter emphasizes the design and installation of integrated systems of materials, machinery, equipment, and personnel.

16.01 12 INSTRUMENTATION TECHNOLOGY - A sequence of classroom and laboratory experiences, supported by physical sciences and mathematics, concerned with providing an understanding in the fields of electricity, electronics, mechanics, pneumatics, and hydraulics as they pertain to applications of the principles of control and recording systems and automated devices. The instructional program is planned to prepare the pupil to design, develop prototypes, and test and evaluate control systems or automated systems and to prepare graphs, written reports and test results in support of the professional personnel working in the field of instrumentation.

16.01 13 MECHANICAL TECHNOLOGY - A program of instruction designed to develop knowledge and understanding concerning scientific principles, mathematical concepts, and communicative skills, combined with appropriate laboratory experiences which will prepare a pupil to become supportive to the mechanical engineer.

16.01 14 METAL TECHNOLOGY - An organization of subject matter and laboratory experiences including specialty courses, physical sciences, mathematics, and general education concerned with the production, research and/or quality control of metals. The instructional program is designed to prepare pupils for performing duties in such areas as: conducting tests on the properties of metal, pilot and production plant design and development, the development, operation, and alteration of test procedures and equipment; and the collection and analysis of data and preparation of comprehensive and detailed reports in support of professional personnel in the metallurgical field.

16.01 16 PETROLEUM TECHNOLOGY - A planned program of classroom and laboratory experiences which include mathematics, chemistry, physics, petrology, sedimentation, and geophysics as applied to the recovery and use of oil and gas. Instruction leads to preparation for: oil field exploration; supervision of rig construction, drilling, oil field services, crude petroleum production, and petroleum refining; and work in direct support of the engineers and geologists in the oil industry.

16.01 17 SCIENTIFIC DATA PROCESSING - A combination of subject matter and experiences, including scientific principles and mathematical concepts, combined with specialty courses and applied laboratory experiences necessary in preparing pupils to: convert scientific, engineering, and other technical problem formulations to processable forms by computer; resolve symbolic formulations; prepare logical flow charts and block diagrams; encode resolvent equations for processing by applying knowledge of advanced mathematics, such as differential equations and numerical analysis; and gain understanding of computer capabilities and limitations.

The program is designed to provide in the pupil the capacity to perform such functions as: consulting with engineering and other technical personnel to resolve problems of intent, inaccuracy, or feasibility of computer processing; observing the computer during testing or processing runs to analyze and correct programming and coding errors; reviewing results of computer runs for determining necessary modifications and reruns; developing new sub-routines or the extension of the application of available programs; and the development of scientific machine languages to simplify programming statements and coding of future problems.

16.01 97 TECHNICAL WRITING - A program of instruction designed to equip the graduate with skills necessary to the communication of technical information. The student may arrange an individualized program to prepare him for employment in a number of positions-promotions, sales, advertising, public relations, technical writing--where a combination of technical knowledge and communication skill is necessary.

16.01 98 DRAFTING AND DESIGN - A program of instruction designed to adequately prepare a student for employment in the various fields of drafting and design technology. Thorough training is given in all phases of drafting and design techniques and procedures with emphasis being placed on the mechanical design field. Related subjects and shop processes are presented in order that they might compliment the technology and assure the student of a working knowledge and understanding of manufacturing processes. Graduates of the two year curriculum will be qualified to enter industry as a draftsman, junior designer, or an engineer's aid.

16.02 05 RANCH OPERATION - A program of instruction designed to provide practical training for individuals interested in the work of ranch operation and management. The student will study such areas as: Livestock Production, Ranch Management, Livestock Laws and Regulations, etc.

16.02 06 FORESTRY - A program of instruction designed to train students in the techniques that are basic to planning, organizing, directing and managing forestry enterprises. It stresses the development of a high level of field and office skills for the technician. The scope of work the technician will be involved in includes Fire Control, Reforestation, Surveying, Timber Cruising, Timber Sale Administration and Timber Inventory.

16.04 01 COMPUTER PROGRAMMING - Programs concerned with converting symbolic statements of business problems to detailed logical flow charts for coding into computer language. Including analyzing all or part of a workflow chart of diagram representing a business problem by applying knowledge of computer capabilities subject matter, algebra, and symbolic to develop the sequence of program steps; conferring with supervisors and representatives of departments concerned with programs to resolve questions of program intent, output requirements, input data acquisition, extent of automatic programming, coding and modification, and inclusions of interval checks and controls; writing detailed logical flow charts in symbolic form to represent work order of data to be processed by a computer system, and to describe input, output, arithmetic, and logical operations involved; concerning detailed logical flow charts to language processable by computer; devising sample input data to provide testing of program adequacy; preparing block diagrams to specify equipment configuration; observing or operating a computer to test a coded program using actual or sample input data; correcting program errors by such methods as altering program steps and sequence; preparing written instructions (run book) to guide operating personnel during production runs; analyzing, revising, and rewriting programs to increase operating efficiency or do adapt to new requirements; compiling documentation of program development and subsequent revisions; and specializing in some instances in writing programs for one make and type of computer.

16.06 01 COMMERCIAL PILOT TRAINING - A program of classroom instruction and practical experience, including mathematics and the appropriate physical sciences, designed to prepare the student to pilot and eventually assume command responsibility for aircraft carrying passengers or freight. The program is planned to enable the student to acquire competency and knowledge in such fields as: aircraft structure, behavior, and operation, and control; radio communications as applied to aircraft; meteorology, navigation; airways safety and traffic regulations; and other aspects of a pilot's duties and responsibilities. The student will be expected to become conversant with governmental rules and regulations pertaining to piloting aircraft and will be expected to pass any tests prescribed by the Federal Aviation Agency for a Commercial Pilot's Certificate upon satisfactory completion of the designated sequence of courses.

16.06 02 FIRE AND SAFETY TECHNOLOGY - A planned sequence of classroom instruction (including the appropriate sciences such as chemistry) and practical experiences designed to prepare the student to function as a fire control and fire safety specialist. The program is planned to enable the student to acquire competency and knowledge in one or more of such diverse fields as: structural design and materials; fire fighting and control, wherein he inspects equipment and advises as to its proper usage; handling of hazardous materials; and advising the public concerning the prevention of accidents and fires.

TRADES AND INDUSTRIAL OCCUPATIONS

17.00 00

Trades and industrial occupations is the branch of vocational education which is concerned with preparing persons for initial employment, or for upgrading or retraining workers in a wide range of trades and industrial occupations. Such occupations are skilled or semiskilled and are concerned with layout designing, producing, processing, assembling, testing, maintaining, servicing, or repairing any product or commodity. Instruction is provided (1) in basic manipulative skills, safety judgement, and related occupational information in mathematics, drafting, and science required to perform successfully in the occupation, and (2) through a combination of shop or laboratory experiences simulating those found in industry and classroom learning. Included is instruction for apprentices in apprenticeable occupations or for journeymen already engaged in a trade or industrial occupation. Also included is training for service and certain semiprofessional occupations concerned to be trade and industrial in nature.

17.01 01 AIR CONDITIONING AND REFRIGERATION - Learning experiences specifically concerned with the installation, operation, testing, and troubleshooting of various types of air cooling equipment and of the controls needed for operation.

17.02. 00 APPLIANCE REPAIR - Classroom and shop experiences concerned with the theory of electrical circuitry, simple gearing, linkages, and lubrication in the operation, maintenance, and repair of components including relays, time switches, pumps, and agitators used in appliances such as washers, dryers, vacuum cleaners, toasters, water heaters, and stoves. Related training is provided in the uses of familiar tools, test equipment, and service manuals, and in making cask estimates for repairs.

17.03 01 AUTO BODY - Specialized learning experiences concerned with all phases of the repair of damaged bodies and fenders, including metal straightening by hammering; smoothing areas by filing, grinding, or sanding; and replacement of body components, including trim.

17.03 02 MECHANICS - Learning experiences concerned with the components of the vehicle, including engine, power transmission, steering, brakes, and electrical systems. Included is training in the use of diagnostic and testing equipment and tools used in the repair process.

17.03 04 FARM EQUIPMENT REPAIR - Classroom and shop experiences which enable the student to become proficient in the repair and maintenance of machinery and equipment utilizing combination welding equipment, hand tools, and other necessary repair techniques. Training prepares the student to install and adjust belts, pulleys, gears, and bearings, and to dismantle and reassemble machinery and equipment.

17.03 05 SEWING MACHINE REPAIR - Classroom and shop experiences which enable the student to become proficient in disassembling, assembling, inspecting, adjusting, lubricating, and repairing sewing machines in accordance with the manufacturer's specifications and accepted standards of the trade.

17.03 06 MACHINE REPAIR - Classroom and shop experiences which enable the student to qualify as an entry level motor mechanic capable of the proficient use of tools in the repair of small internal combustion engines.

17.03 07 MAINTENANCE MECHANIC - Classroom and shop experiences which enable the student to move and install heavy industrial machinery and other equipment. These workers must have a thorough knowledge of the complex industrial equipment on which they work because it is frequently necessary for them to take apart and reassemble this equipment in order to move and/or install it. In assembling machinery, maintenance mechanics fit bearings, aline gears and wheels, attach motors, and connect belts.

17.04 01 AIRCRAFT MECHANICS - Specialized classroom and shop experiences concerned with the maintenance and repair of all airplane parts other than engines, propellers, and instruments. Training emphasizes the layout and fabrication of sheet metal and other materials into parts, fittings, and structural members; assembly and installation of structural members; equipment and mechanical parts; and the disassembly and replacement of damaged or worn parts. Training prepares the pupil for the Federal Aviation Agency examination for the air frame mechanic's license.

17.04 01 AIRCRAFT MECHANICS (Power Plant) - Specialized classroom and shop experiences concerned with the maintenance and repair of all types of power plants for aircraft. Course work includes engine inspection and maintenance; lubrication and cooling; electrical and ignition systems; carburetion, fuels, and fuels systems; and propellers. Training prepares the pupil for the Federal Aviation Agency examination for the power plant mechanic's license.

17.04 03 GROUND OPERATIONS - Classroom and practical experience cocerned with the ground support of commercial planes, including passenger service, aircraft preflight service, and flight control, e.g., baggage handler, ticket agent, and traffic controller training.

17.06 00 BUSINESS MACHINE REPAIR - Classroom and shop experiences concerned with maintaining and repairing a variety of office machines such as typewriters, dictation machines, and calculators; data processing equipment used for recording and processing data; and duplicating and mailing machines. Instruction includes diagnostic techniques; understanding of mechanical principles such as those involved in gears, cams, levels, and eccentrics; nomenclatures; uses and care of special hand and power tools; soldering; mechanical drawing; principles of electricity and electronics; uses of testing devices; and business procedures and customer relations.

17.07 00 COMMERCIAL ART OCCUPATIONS - Organized specialized learning experiences which include theory, laboratory, and shopwork as they relate to the design and execution of layouts and making illustrations for advertising, display, and instructional manuals. Instruction includes advertising theory and preparation of copy, lettering, poster design, fashion illustration, silk screen, air brush and touchup, inks and color dynamics, package and product design, drawings for line and halftone reproduction, and other display devices and exhibits. Instruction leads to preparation for various types of employment such as fashion illustrator, technical illustrator, interior decorator, and advertising artist.

17.09 00 COMMERICAL PHOTOGRAPHY OCCUPATIONS - Organized specialized learning experiences which include theory, laboratory, and studio work as each relates to all phases of camera uses and photographic processing. Instruction includes composition and color dynamics, contact printing, and enlarging; developing film; air brush and retouching, coloring, and copying; utilization of cameras, meters, and other photographic equipment; portrait, commercial, and industrial photography; and processes such as microfilming and preparing copy for other printing and graphic arts processing.

Instruction also emphasizes the development of skills and knowledge essential for employment in planning, developing, and producing in such areas as audiovisual materials and telecasting, and for employment as a commercial photographer, airbrush man, cameraman (offset printing), audiovisual projectionist, and cameraman (broadcasting).

17.10 01 CARPENTRY - Classroom and shop experiences involving layout, fabrication, assembly, installation, and repair of structural units, emphasized in instruction are the care and use of hand and power tools; equipment and materials; common systems of frame construction and the principles involved; and drafting, blueprint reading, applied mathematics, and materials estimating.

17.10 03 HEAVY EQUIPMENT (Construction) - Classroom and practical work experiences concerned with the operation, maintenance, and repair of heavy-duty equipment such as bulldozers, cranes, graders, tractors, concrete mixers, crawler-mounted shovels, trailer-mounted compressors, and the gasoline or diesel engines powering the equipment.

17.10 04 MASONRY - Specialized classroom and shop experiences concerned with the cutting, chipping, and fixing in position of concrete blocks, brick, and glass blocks using bonding materials and hand tools. Included is training in reading architectural plans, planning, and estimating.

17.10 07 HEATING AND PLUMBING - Specialized classroom and shop experiences concerned with layout assembly, installing, altering, and repairing piping systems, including related fixtures and fittings in structures, by the use of pipecutting, bending, and threading tools; welding, soldering, and brazing equipment; and other hand and power tools and equipment.

17.10 97 SEWAGE PLANT OPERATOR - Classroom and shop experiences which enable the student to operate various systems in a sewage plant to purify waste water from the plant before it enters rivers, streams, or city mains. The student will be able to run laboratory checks which include chemical, physical, and bacteriological tests that pertain to waste water treatment. The student will also be better able to perform maintenance and plant upkeep duties which are a normal part of the plant operation.

17.10 98 MINING MACHINE OPERATOR - Classroom and shop experiences which enable the student to become proficient in general mine safety, operation of transportation equipment, detection and control of mine gases, mine ventilation, roof control, and blasting procedures. The student should be able to pass required Federal and state examinations on mine laws and codes for mine foremen and equipment operators.

17.12 00 DIESEL MECHANIC - Classroom and shop experiences which are concerned with all phases of repair work on diesel engines used to power buses, ships, trucks, railroad trains, electric generators, construction machinery, and similar equipment. Instruction and practice is provided in the diagnoses of malfunction; disassembly of engines and examination of parts; reconditioning and replacement of parts; repair and adjustment of fuel injection systems, oil and water pumps, generators, governors, auxiliary and accompanying power units, controls, and transmissions. The uses of technical manuals, a variety of hand and power tools, and testing and diagnostic equipment are also studied.

17.13 00 DRAFTING OCCUPATIONS - Organized specialized learning experiences which emphasize theory, use of the drafting room, and laboratory and shopwork as each relates to gathering and translating data or specifications, including the aspect of planning, preparing, and interpreting mechanical, architectural, structural, pneumatic, marine electrical/electronic, topographical, and other drawings and sketches. Instruction is designed to provide experiences in the use of drawing reproduction materials, equipment, and processes; the preparation of reports and data sheets for writing specifications; the development of plan and process charts and drawings; and the development of models.

Instruction emphasizes the development of skills and knowledge essential for employment in ancillary capacities such as tracers or reproduction equipment operators, and for occupations such as mechanical draftsman, structural draftsman, detailer, marine draftsman, tool designer, fixture designer, and punch and die designer.

17.14 01 ELECTRICIAN - Specialized classroom and practical instruction related to the maintenance and repair of a variety of industrial machinery driven by electric motors or which are electrically controlled.

17.15 00 ELECTRONICS ASSEMBLER - Organized specialized learning experiences which include theory, laboratory, and shopwork as each is related to planning, producing, testing, assembling, installing, and maintaining electronic communications equipment. Instruction is designed to develop knowledge, understanding, and skills essential for employment in communications, industrial electronics, radio/television, and other electronics occupations.

17.15 02 ELECTRONICS - Specialized classroom, laboratory, and practical experiences concerned with the basic elements of vacuum tubes and circuitry; using and servicing testing equipment, and troubleshooting circuits; the study of and experience in repairing photoelectric controls, timers, selector switches, counters, recorders, and transducers; and the study of the characteristics and intricacies of equipment and components used in industry and research centers.

17.15 03 RADIO/TELEVISION REPAIR - Specialized theory and practice which are concerned with the construction, maintenance, and repair of radios and television sets. Training also prepares pupils to diagnose troubles and make repairs on other electronic products such as high-fidelity sound equipment, phonographs, and tape recorders.

17.16 01 DRYCLEANING - Classroom and practical experiences concerned with theory and knowledge in drycleaning plant management and processes. Instruction includes receiving garments, inspecting dry and wet cleaning, identifying spots and spotting, pressing, dyeing, and sorting and wrapping wearing apparel, household furnishings, and other articles of textile construction or leather. Also emphasized are experiences concerned with various cleaning agents, kinds of fabrics, alteration and repair of fabrics, and uses of hand and power tools and equipment.

17.19 02 PRINTING PRESS OCCUPATIONS - Organized learning experiences concerned with making ready, operating, and maintaining printing presses.

17.19 06 BOOK BINDING - Organized learning experiences concerned with gathering pages, forms, and related materials and assembling them into books or pamphlets. Included are techniques concerned with binding and repairing books and documents.

17.21 00 SMALL ENGINE REPAIR - Classroom, laboratory, and practical experiences concerned with maintaining and repairing meters, instruments, watches and clocks, and other physical measuring devices. Instruction includes experiences in diagnosing malfunctions; disassembling, repairing and/or replacing faulty parts; cleaning, assembling and adjusting; and using special bench and handtools, meters and standards.

17.23 02 MACHINE SHOP - Specialized classroom and shop experiences concerned with all aspects of shaping metal parts. Instruction involves making computations relating to work dimensions, tooling, feeds, and speeds of machining. Also emphasized are: work on the bench, and on lathes, shapers, milling machines, grinders and drills; the uses of precision measuring instruments such as layout tools, micrometers, and gages; methods of machining and heat treatment of various metals; blueprint reading; and the layout of machine parts. Instruction prepares the pupil to operate and repair all machines.

17.23 03 MACHINE TOOL OPERATION - Specialized learning experiences designed to prepare a semiskilled worker to run only one machine, e.g., lathe, grinder, drill press, milling machine, or shaper.

17.23 05 SHEET METAL - Specialized classroom and shop experiences concerned with the layout, fabrication, erection or installation, and maintenance of items made of steel, copper, stainless steel, and aluminum such as ventilating, air conditioning, and heating ducts, kitchen equipment, signs, furniture, and skylights. Instruction emphasizes the use of hand tools and machine such as the cornice brake, forming rolls, and squaring shears; drafting; and blueprint reading.

17.23 06 WELDING - Specialized classroom and shop experiences concerned with all types of metal welding, brazing, and flame cutting. Instruction emphasizes properties of metals, blueprint reading, electrical principles, welding symbols, and mechanical drawing.

17.26 01 BARBERING - Classroom and practical experiences concerned with haircutting and styling, shaving, shampooing, and massaging. Emphasis is on hygiene, skin and scalp diseases, and sterilization of instruments and utensils. Instruction is designed to qualify pupils for licensing examinations.

17.26 02 COSMETOLOGY - Classroom and practical experience concerned with a variety of beauty treatments, including the care and beautification of the hair, complexion, and hands. Instruction includes training in giving shampoos, rinses, and scalp treatments; hair styling, setting, cutting, dyeing, tinting, and bleaching; permanent waving; facials; and manicuring and hand and arm massaging. Bacteriology, anatomy, hygiene, sanitation, salon management (including keeping records), and customer relations are also emphasized. Instruction is designed to qualify pupils for the licensing examination.

17.28 01 FIREMAN TRAINING - Specialized class and practical experiences concerned with the practices and techniques of firefighting. Instruction treats the organization of a community fire department; the chemistry of fire; the use of water and other materials in fighting fires; the various kinds of firefighting equipment and aids and their uses, such as extinguishers, pumps, hose, rope, ladders, gas masks, hydrants, and standpipe and sprinkler systems; methods of entry; rescue principles, practices, and equipment; salvage equipment and work; fire and arson investigation; inspection techniques; and radiation hazards.

17.28 02 LAW ENFORCEMENT TRAINING - Specialized class and practical experiences designed to supplement the training provided by officially designated law enforcement agencies. Instruction includes acquiring and maintaining the uniform; patrolling on foot or in an automobile during the day or at night; dealing with misdemeanors, felonies, traffic violations, and accidents; making arrests; and testifying in court.

17.29 01 BAKER - Specialized classroom and practical work experiences associated with the preparation of bread, crackers, cakes, pies, pastries, and other bakery products for retail distribution or for consumption in a commercial food service establishment. Instruction includes making, freezing, and handling of bake products; decorating; counter display; and packaging of merchandise. Training prepares the pupil as an all-round baker, although he may be employed in the production of any one type of goods such as pastries.

17.29 02 COOK/CHEF - Specialized classroom and practical work experiences concerned with the preparation and cooking of a variety of foods. Included is study of the use and care of equipment; food standards such as the selection and preparation of food and the determination of size of servings; sanitation procedures, including food handling; cooking methods such as broiling and steaming; and preparation of special dishes such as soups, salads, garnishes, souffles, and meringues. Although the pupil qualifies as an all-round worker, he may, depending on the size of the establishment, specialize in the preparation of specific types of foods, e.g., meats, vegetables, or sauces.

17.29 03 MEAT CUTTER - Specialized classroom and practical work experiences concerned with the cutting, trimming, and preparation of carcasses and consumer size portions for sale by wholesale or retail establishments, or for cooking in a food service establishment. Instruction is provided in the use of certain meat cutting tools, identification of and techniques used in cutting different cuts of meats, dressing poultry, processing fish, counter display, and refrigeration of meats, poultry, and fish.

17.32 04 BOILER OPERATIONS (Stationary Engineer) - Regulate fuel, air, and water supply in boilers and maintain proper steam pressure needed to turn the turbines on the basis of information shown by gauges, meters, and other instruments mounted on panel boards.

17.33 02 TAILORING - Specialized learning experiences concerned with the fabrication and alteration by hand and machine, of all types of men's, women's, and children's outer garments. Instruction includes taking measurements, preparing patterns, cutting, sewing, and fitting; hand and powered machine sewing; hand and machine pressing; and making repairs and alterations from start to finish, according to patterns and the designer's specifications.

17.35 00 UPHOLSTERING - Classroom and shop experiences concerned with all aspects of upholstering, including furniture, automobile seats, caskets, mattresses, and bedsprings. Instruction includes history and styles of furniture; installing, repairing, arranging, and securing springs, filler, padding, and covering material; patternmaking; cutting, sewing, and trimming outside coverings; cushion filling; styling and designing; tufting and buttoning; and wood refinishing.

17.36 01 MILLWORK AND CABINET MAKING - Specialized class and practical work experiences concerned with mass production of products such as window frames, moldings, trim, and panels; and with making such products as furniture, store fixtures, kitchen cabinets, and office equipment. Instruction includes training in cutting, shaping, and assembling parts by means of hand tools and woodworking machines; refinishing furniture; installation of hardware, e.g., hinges, catches, and drawer pulls; planning layouts; blueprint reading; drafting; and various kinds of woods.

APPENDIX B

DOCUMENTATION OF THE MANPOWER DEMAND SUBSYSTEM

Objectives

The primary objectives of this subsystem are to:

(a) Work with the Oklahoma Employment Security Commission in using their benchmark data (updated) on non-farm manpower demand in Oklahoma for interfacing with supply data,

(b) Devise a method for forcasting on-farm manpower demand to be used for interfacing with supply,

(c) Collect manpower demand data which could be used to assist the Oklahoma Employment Security Commission in updating their benchmark data,

(d) Develop rapport between occupational educators and representatives of industry, and

(e) Gather specific 'by firm and by job' data on Oklahoma industry for curriculum development and student placement.

Procedure for Objective a (Collecting Benchmark Data)

In 1967 the Oklahoma Employment Security Commission collected benchmark demand data which is the primary source of manpower demand information used in interfacing demand and supply in this system. **The** following quote from Manpower in Oklahoma - Industrial and Occupational Analysis published by the Oklahoma Employment Security Commission in 1968 describes the procedure used in collection of this data.

> The specific occupations in the survey were selected by a joint committee of personnel from the Department of Vocational-

Technical Education and The Oklahoma State Employment Service. The final list consisted of some 299 occupations with either numerical or specific industrial significance within the area. Following this, the occupations were defined according to the U. S. Department of Labor's Dictionary of Occupational Titles, Third Edition, 1965.

Firms included in the study were drawn from a list of concerns covered by unemployment insurance laws and augmented by a register of the larger non-covered establishments such as government agencies, hospitals and other non-profit organizations. These firms were listed by industrial division in descending order by employment size. Establishments comprising the upper 50 percent of the area's employment total as shown on the register were included in the survey. Next, twenty percent and four percent samples were selected from the third and fourth quartiles, respectively.

During the second week of June 1967, questionnaires, job descriptions and instructions were mailed to approximately two-thirds of the surveyed firms. Over the next several weeks personal visits were made to the states' larger employers to solicit their cooperation.

As returned, the forms were checked for accuracy and completeness. Following this, the information for each sample size group was tabulated and inflated to represent the universe. Thereupon, an adjustment was made so the data would agree with published industry employment totals. These adjustment factors in turn, were applied to data for each occupation in the survey. Expansion needs were then determined from these figures while replacement requirements were computed by use of factors and methodology provided by the Bureau of Employment Security, U. S. Department of Labor.

Procedure Objective b (on-farm demand)

Dr. Luther Tweeten, Oklahoma State University, projected the on-farm manpower demand in Oklahoma. A description of the methods he used are reported in Chapter II.

Procedures for Objectives c, d and e

The OTIS staff and selected data collectors compiled manpower demand data on 3623 manufacturing industries in Oklahoma during the summer of 1969. The information was collected through interviews with employers, personnel managers and other company officials who had access to manpower demand data. The interviewers were primarily representatives of local occupational educators.

The data was processed and given to the Oklahoma Employment Security Commission, the Oklahoma Department of Vocational and Technical Education, the Oklahoma Industrial Development and Park Department and local Chambers of Commerce. The Oklahoma Department of Vocational and Technical Education further distributed the information to selected local school administrators.

The Oklahoma Employment Security Commission, using the 1967 benchmark data as a base and the new data for updating purposes when feasible, projected manpower demand for the following year. This information, along with manpower supply data provided by the Oklahoma Department of Vocational and Technical Education was used in the interfacing of supply and demand data.

The following steps were used to collect, process and distribute the data collected in the summer of 1969 (See Figure B-1 for a graphic description of these steps).

Step 1 - Selection of the Target Population

The Oklahoma Department of Vocational and Technical Education suggested that a survey be made of manufacturing industry jobs during the summer 1969. The OTIS Advisory Board approved this suggestion and instructed the OTIS staff to proceed with the survey.

Step 2 - Definition of the Industrial Population to be Surveyed

The industrial population selected to be surveyed was the 3816 industries listed in the Oklahoma Directory of Manufacturers and Products published by the Oklahoma Industrial Development and Park Department.

This population was selected by representatives of the Oklahoma Department of Vocational and Technical Education and the OTIS staff.

Step 3 - Definition of the Jobs to be Surveyed

Non-professional jobs found in the manufacturing sector of industry and listed in the Oklahoma Employment Security Commission Study were selected to be surveyed. In addition, job titles are not listed on the demand survey instrument were entered by title and description by the employer.

Step 4 - Definition of Demand Collection Regions

The OTIS staff and the Department of Vocational and Technical Education selected survey regions for data collectors based on the number of industries to be surveyed, the geographic distribution of the industries and the location of Oklahoma's Area Schools. There were from 198 to 1156 industries per region. The two largest regions in terms of number of industries to be surveyed (Oklahoma City SMSA and Tulsa SMSA) were designed for teams of data collectors (See Figure B-2 for a map of the regions).

Step 5 - Design of the Data Collection Instrument

The OTIS staff, with advice from the Oklahoma Department of Vocational and Technical Education and the Oklahoma Employment Security Commission designed the data collection instrument (See Figure B-3). The instrument used by the Employment Security Commission to gather benchmark data in 1967 was used as a general model.

Step 6 - Selection of Data Collectors

The Oklahoma Department of Vocational and Technical Education selected local occupational educators or local industrial coordinators to survey the selected regions. It was felt that the use of occupational educators for data collectors would establish needed rapport with industrial representatives on a continuous basis.

Step 7 - Training of Data Collectors

A two day seminar to train data collectors was held with speakers from the OTIS staff, Oklahoma State University, the Oklahoma Department of Vocational and Technical Education and the Oklahoma Employment Security Commission (See Figure B-4).

Step 8 - Collection of Data

The data collectors visited industries in their regions of responsibility during the period from June 16, 1969 to August 15, 1969. The instruments were completed during the interview when possible and left with company representatives when immediate completion was not possible. The instruments that were left with industries were picked up at subsequent visits or mailed by the particular firm to the State Department of Vocational and Technical Education which directed them to the OTIS staff after noting special remarks.

Step 9 - Processing the Data

The data processing sequence can be divided into three phases: (a) preparing the data for the computer, (b) building the files of data and (c) producing summary documents for users (See Figure B-5 for a graphic description of the data processing sequence).

The following sequence of events were involved in the preparation of data for the computer.

1. The OTIS staff assigned a form number to each instrument and gave the instrument to the Employment Security Commission.
2. The Employment Security Commission assigned a SIC code to each instrument and returned it to the OTIS staff.
3. The OTIS staff assigned D.O.T. codes to the write-in jobs.
4. The OTIS staff transfers the data on the instruments to four types of coding forms (See Figure B-6 through B-9 for examples of the coding forms).
5. The Oklahoma State University Computer Center keypunched and verified the data on the coding forms (See Figure B-10 for data card layouts).

The following sequence of events were involved in building data files, i.e. phase 2.

1. The A, B and C data cards were sorted and merged according to form number to make a card file composed of three card records, i.e., a three card record on each establishment.
2. This card file was transferred to tape file 1 (See Figure B-11 for a description of tape file 1).
3. The D cards were sorted according to form number to make a second card file.
4. The D card file was transferred to tape file 2 (See B-12 for a description of tape file 2).

5. Tape file 1 and tape file 2 were merged to form tape file 3 (See Figure B-13 for a description of tape file 3).
6. Tape file 1 and tape file 3 were sorted with county number as a major key and firm name as a minor key.
7. The D cards were sorted into regions and separated by region definition cards and end of file cards. (See Figure B-14 for a sample of a region definition card and Figure B-15 for a graphic description of this file).

The following sequence of events were involved in producing reports for users, i.e. phase 3.

1. Tape file 1 and tape file 3 in the sorted version were merged to form a job by industry by county report (See Figure B-16 for an example page from this report).
2. The D cards by region were used to prepare a series of reports summarizing (a) total employment, (b) on-the-job training, (c) new jobs in 1969, (d) on job training in 1969, (e) replacements in 1970, (f) new jobs in 1970, (g) replacements in 1971, and (h) new jobs in 1971 (See Figure B-17 through B-20 for example pages from these selected reports).

Step 10 - Dissemination of Reports

The following agencies were given copies of summary reports prepared by this subsystem.

1. The Oklahoma Department of Vocational and Technical Education received copies of all reports.
2. The Oklahoma Employment Security Commission received copies of all reports with the exception of on-the-job training in 1969.

3. The Industrial Development and Park Department received a copy of the job by firm by county report.
4. Local occupational educators received copies of reports that would be useful in their particular circumstances.

Cost of this Subsystem

Given data collectors at $500.00 per month and $12.00 per day travel expenses, it costs between $6.00 and $7.00 per establishment to collect data in this way; the variance is due to possible distribution of industries in terms of geography.

The cost of this study was approximately $17,000 because much of the labor was contributed by the Department of Vocational and Technical Education.

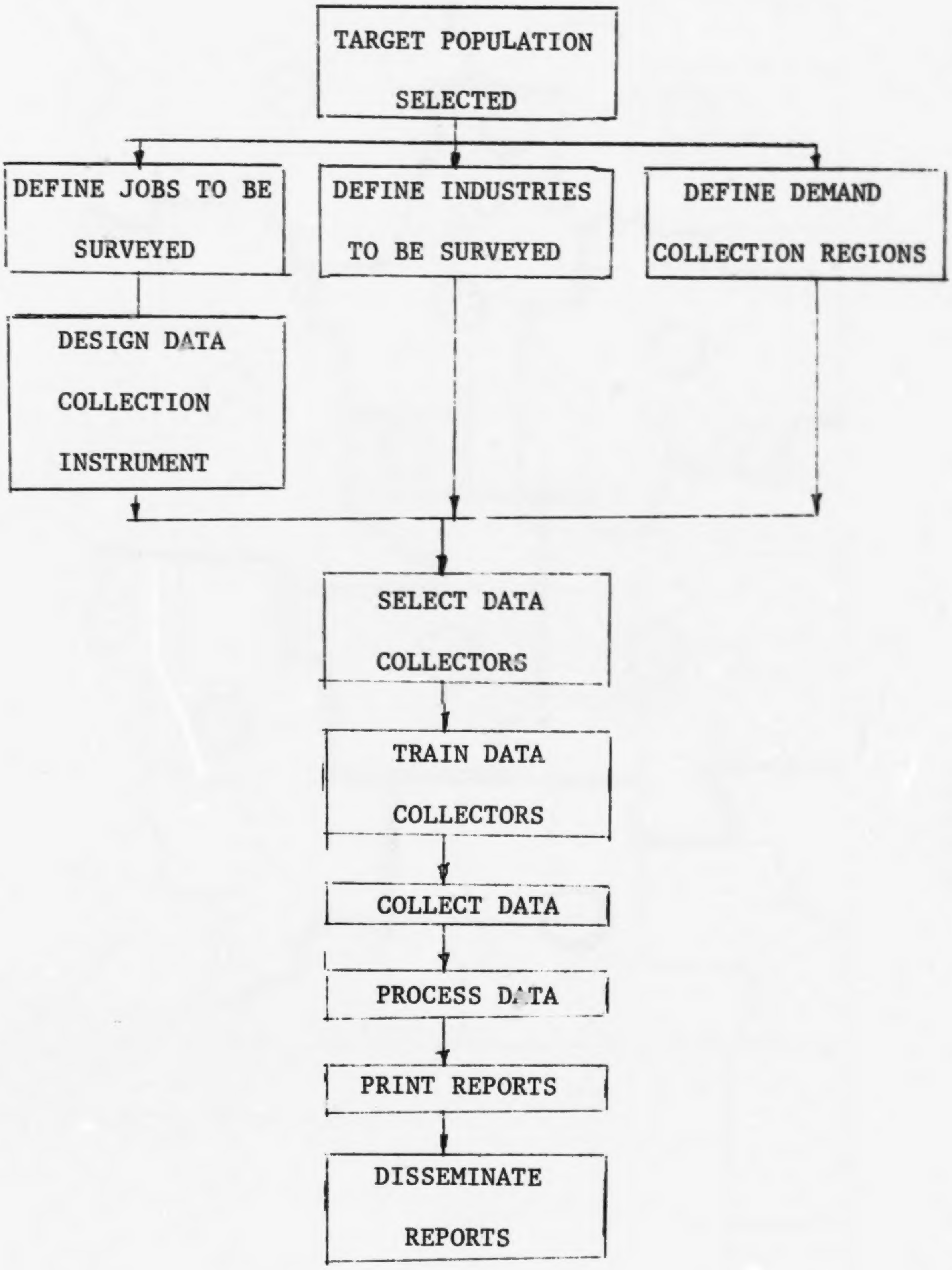
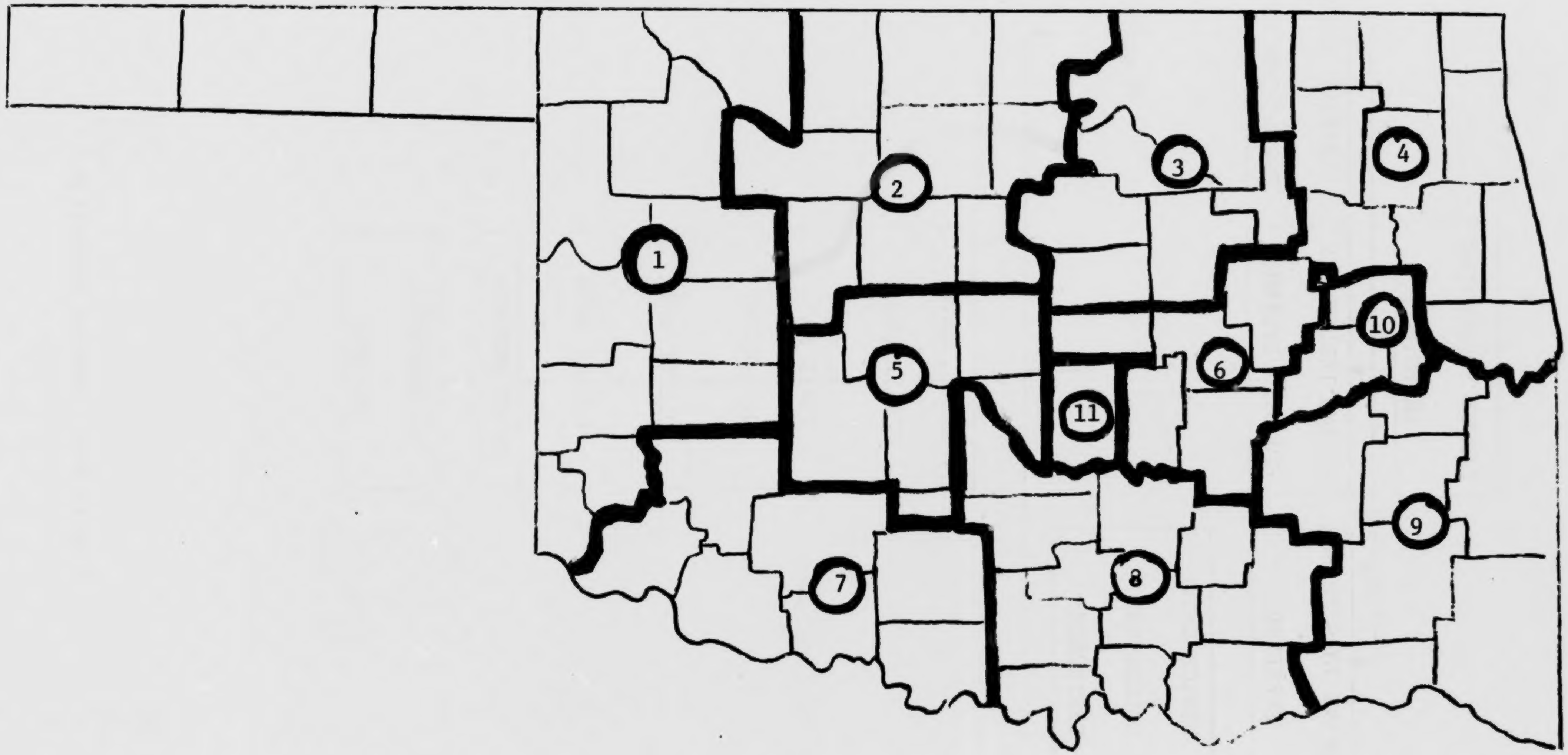

TARGET POPULATION SELECTED
DEFINE JOBS TO BE SURVEYED
DEFINE INDUSTRIES TO BE SURVEYED
DEFINE DEMAND COLLECTION REGIONS
DESIGN DATA COLLECTION INSTRUMENT
SELECT DATA COLLECTORS
TRAIN DATA COLLECTORS
COLLECT DATA
PROCESS DATA
PRINT REPORTS
DISSEMINATE REPORTS

Figure B-1. Demand Subsystem

OKLAHOMA


1
2
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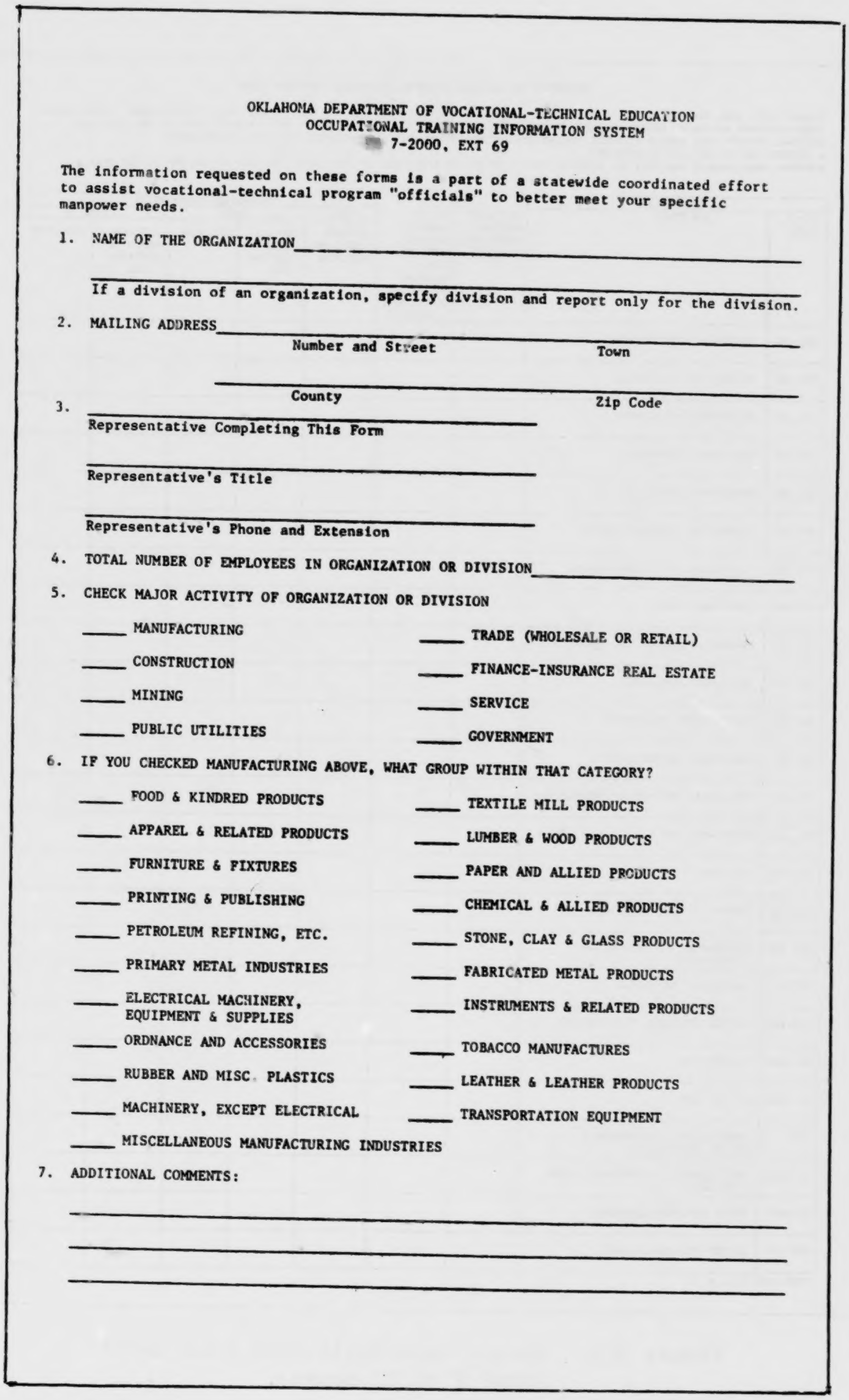
10
11

Figure B-2. Demand Data Collection Regions



OKLAHOMA DEPARTMENT OF VOCATIONAL-TECHNICAL EDUCATION
OCCUPATIONAL TRAINING INFORMATION SYSTEM
[redacted] 7-2000, EXT 69

The information requested on these forms is a part of a statewide coordinated effort to assist vocational-technical program "officials" to better meet your specific manpower needs.

1. NAME OF THE ORGANIZATION____________________

   ____
   If a division of an organization, specify division and report only for the division.

2. MAILING ADDRESS____________________
   Number and Street Town

   ____
   County Zip Code

3. ____________________
   Representative Completing This Form

   ____
   Representative's Title

   ____
   Representative's Phone and Extension

4. TOTAL NUMBER OF EMPLOYEES IN ORGANIZATION OR DIVISION____________________

5. CHECK MAJOR ACTIVITY OF ORGANIZATION OR DIVISION

   ____ MANUFACTURING
   ____ CONSTRUCTION
   ____ MINING
   ____ PUBLIC UTILITIES
   ____ TRADE (WHOLESALE OR RETAIL)
   ____ FINANCE-INSURANCE REAL ESTATE
   ____ SERVICE
   ____ GOVERNMENT

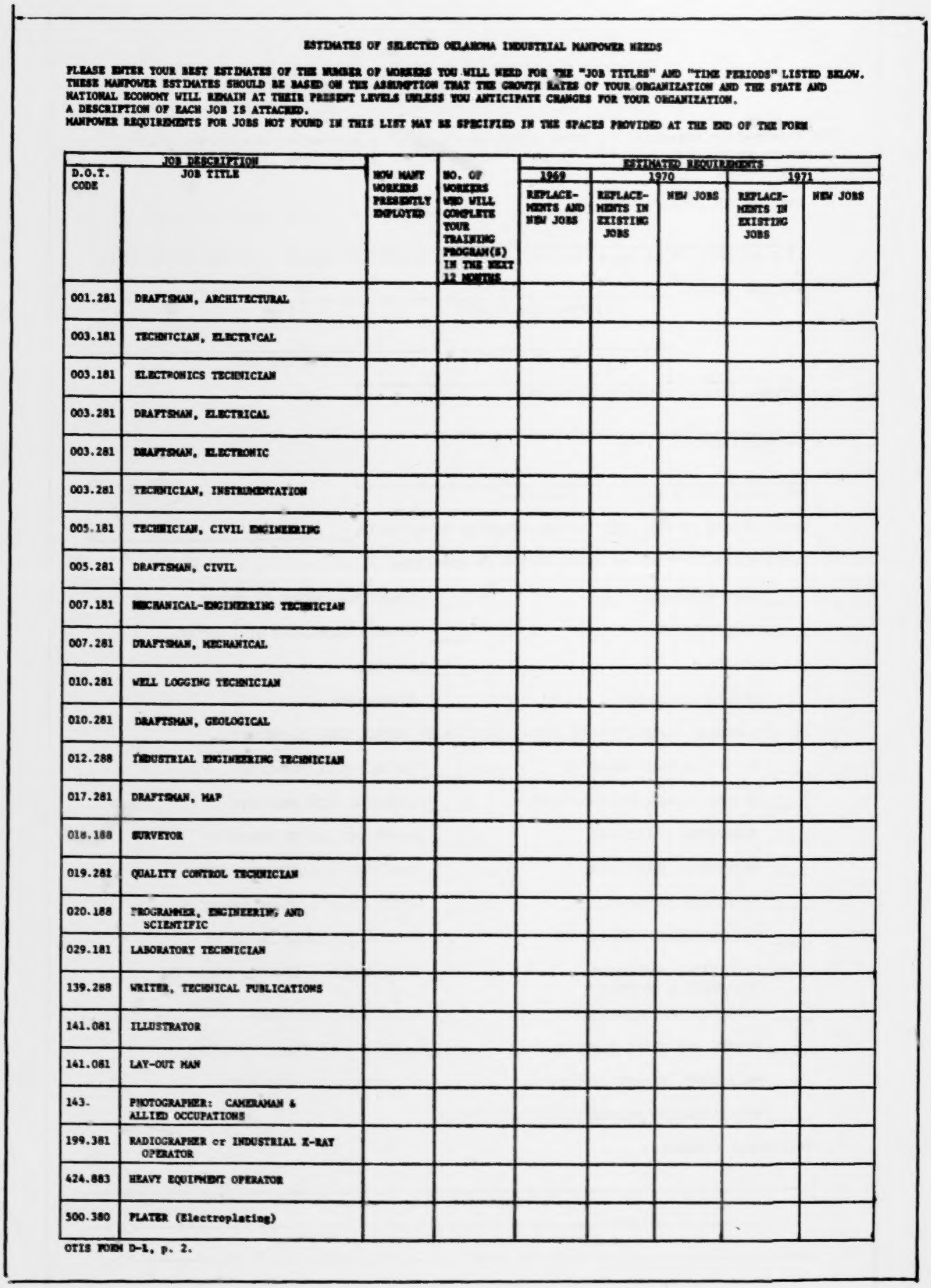
6. IF YOU CHECKED MANUFACTURING ABOVE, WHAT GROUP WITHIN THAT CATEGORY?

   ____ FOOD & KINDRED PRODUCTS
   ____ APPAREL & RELATED PRODUCTS
   ____ FURNITURE & FIXTURES
   ____ PRINTING & PUBLISHING
   ____ PETROLEUM REFINING, ETC.
   ____ PRIMARY METAL INDUSTRIES
   ____ ELECTRICAL MACHINERY, EQUIPMENT & SUPPLIES
   ____ ORDNANCE AND ACCESSORIES
   ____ RUBBER AND MISC. PLASTICS
   ____ MACHINERY, EXCEPT ELECTRICAL
   ____ MISCELLANEOUS MANUFACTURING INDUSTRIES
   ____ TEXTILE MILL PRODUCTS
   ____ LUMBER & WOOD PRODUCTS
   ____ PAPER AND ALLIED PRODUCTS
   ____ CHEMICAL & ALLIED PRODUCTS
   ____ STONE, CLAY & GLASS PRODUCTS
   ____ FABRICATED METAL PRODUCTS
   ____ INSTRUMENTS & RELATED PRODUCTS
   ____ TOBACCO MANUFACTURES
   ____ LEATHER & LEATHER PRODUCTS
   ____ TRANSPORTATION EQUIPMENT

7. ADDITIONAL COMMENTS:

   ____
   ____
   ____

Figure B-3. Demand Data Collection Instrument
(Page 1 of 15 pages)



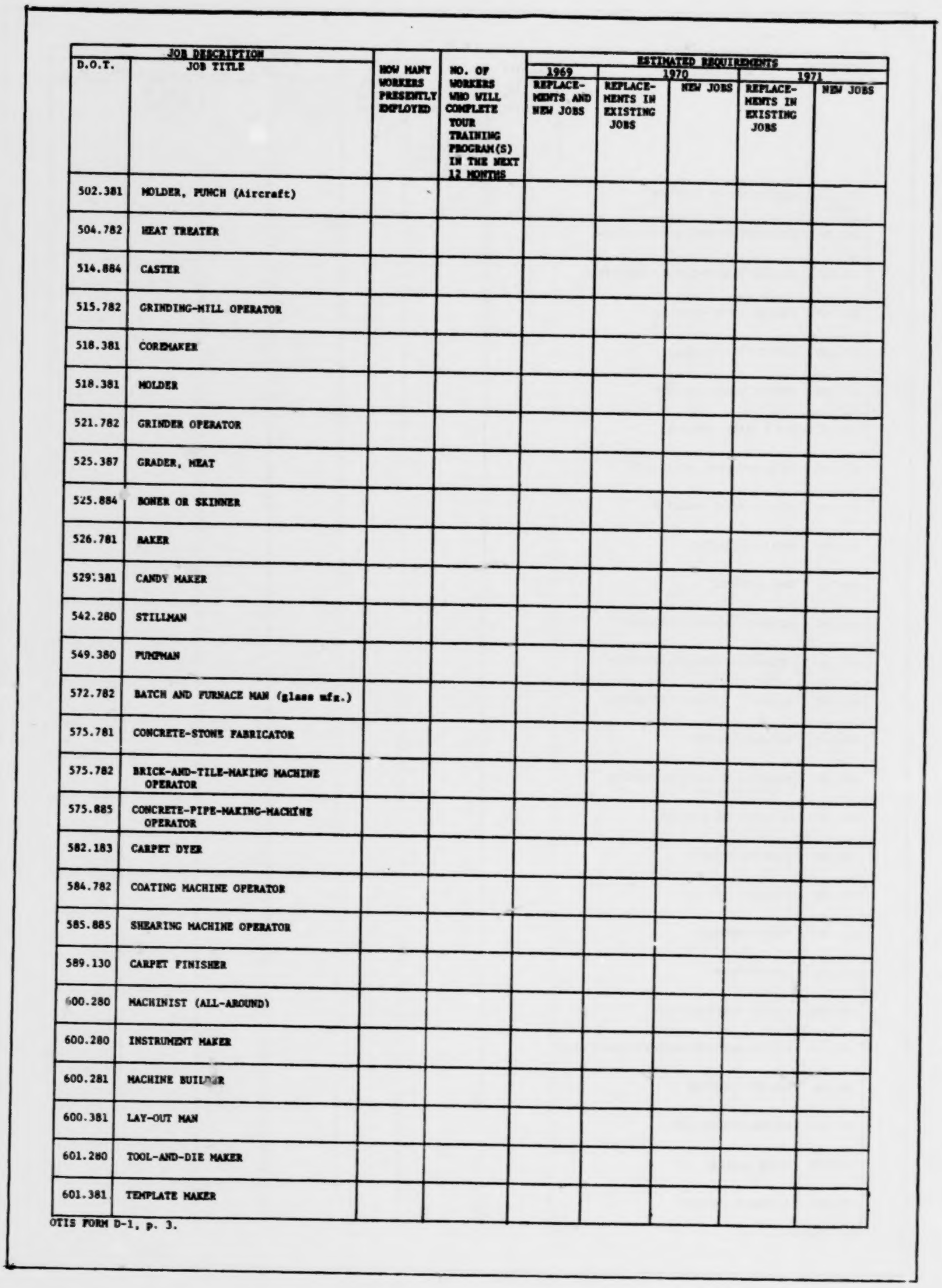
ESTIMATES OF SELECTED OKLAHOMA INDUSTRIAL MANPOWER NEEDS

PLEASE ENTER YOUR BEST ESTIMATES OF THE NUMBER OF WORKERS YOU WILL NEED FOR THE "JOB TITLES" AND "TIME PERIODS" LISTED BELOW. THESE MANPOWER ESTIMATES SHOULD BE BASED ON THE ASSUMPTION THAT THE GROWTH RATES OF YOUR ORGANIZATION AND THE STATE AND NATIONAL ECONOMY WILL REMAIN AT THEIR PRESENT LEVELS UNLESS YOU ANTICIPATE CHANGES FOR YOUR ORGANIZATION.
A DESCRIPTION OF EACH JOB IS ATTACHED.
MANPOWER REQUIREMENTS FOR JOBS NOT FOUND IN THIS LIST MAY BE SPECIFIED IN THE SPACES PROVIDED AT THE END OF THE FORM

JOB DESCRIPTION				ESTIMATED REQUIREMENTS				
D.O.T. CODE	JOB TITLE	HOW MANY WORKERS PRESENTLY EMPLOYED	NO. OF WORKERS WHO WILL COMPLETE YOUR TRAINING PROGRAM(S) IN THE NEXT 12 MONTHS	1969	1970		1971	
				REPLACEMENTS AND NEW JOBS	REPLACEMENTS IN EXISTING JOBS	NEW JOBS	REPLACEMENTS IN EXISTING JOBS	NEW JOBS
001.281	DRAFTSMAN, ARCHITECTURAL							
003.181	TECHNICIAN, ELECTRICAL							
003.181	ELECTRONICS TECHNICIAN							
003.281	DRAFTSMAN, ELECTRICAL							
003.281	DRAFTSMAN, ELECTRONIC							
003.281	TECHNICIAN, INSTRUMENTATION							
005.181	TECHNICIAN, CIVIL ENGINEERING							
005.281	DRAFTSMAN, CIVIL							
007.181	MECHANICAL-ENGINEERING TECHNICIAN							
007.281	DRAFTSMAN, MECHANICAL							
010.281	WELL LOGGING TECHNICIAN							
010.281	DRAFTSMAN, GEOLOGICAL							
012.288	INDUSTRIAL ENGINEERING TECHNICIAN							
017.281	DRAFTSMAN, MAP							
018.188	SURVEYOR							
019.281	QUALITY CONTROL TECHNICIAN							
020.188	PROGRAMMER, ENGINEERING AND SCIENTIFIC							
029.181	LABORATORY TECHNICIAN							
139.288	WRITER, TECHNICAL PUBLICATIONS							
141.081	ILLUSTRATOR							
141.081	LAY-OUT MAN							
143.	PHOTOGRAPHER: CAMERAMAN & ALLIED OCCUPATIONS							
199.381	RADIOGRAPHER or INDUSTRIAL X-RAY OPERATOR							
424.883	HEAVY EQUIPMENT OPERATOR							
500.380	PLATER (Electroplating)							

OTIS FORM D-1, p. 2.

Figure B-3. Demand Data Collection Instrument
(Page 2 of 15 pages)



JOB DESCRIPTION		HOW MANY WORKERS PRESENTLY EMPLOYED	NO. OF WORKERS WHO WILL COMPLETE YOUR TRAINING PROGRAM(S) IN THE NEXT 12 MONTHS	ESTIMATED REQUIREMENTS				
D.O.T.	JOB TITLE			1969	1970		1971	
				REPLACE-MENTS AND NEW JOBS	REPLACE-MENTS IN EXISTING JOBS	NEW JOBS	REPLACE-MENTS IN EXISTING JOBS	NEW JOBS
502.381	MOLDER, PUNCH (Aircraft)							
504.782	HEAT TREATER							
514.884	CASTER							
515.782	GRINDING-MILL OPERATOR							
518.381	COREMAKER							
518.381	MOLDER							
521.782	GRINDER OPERATOR							
525.387	GRADER, MEAT							
525.884	BONER OR SKINNER							
526.781	BAKER							
529.381	CANDY MAKER							
542.280	STILLMAN							
549.380	PUMPMAN							
572.782	BATCH AND FURNACE MAN (glass mfg.)							
575.781	CONCRETE-STONE FABRICATOR							
575.782	BRICK-AND-TILE-MAKING MACHINE OPERATOR							
575.885	CONCRETE-PIPE-MAKING-MACHINE OPERATOR							
582.183	CARPET DYER							
584.782	COATING MACHINE OPERATOR							
585.885	SHEARING MACHINE OPERATOR							
589.130	CARPET FINISHER							
600.280	MACHINIST (ALL-AROUND)							
600.280	INSTRUMENT MAKER							
600.281	MACHINE BUILDER							
600.381	LAY-OUT MAN							
601.280	TOOL-AND-DIE MAKER							
601.381	TEMPLATE MAKER							

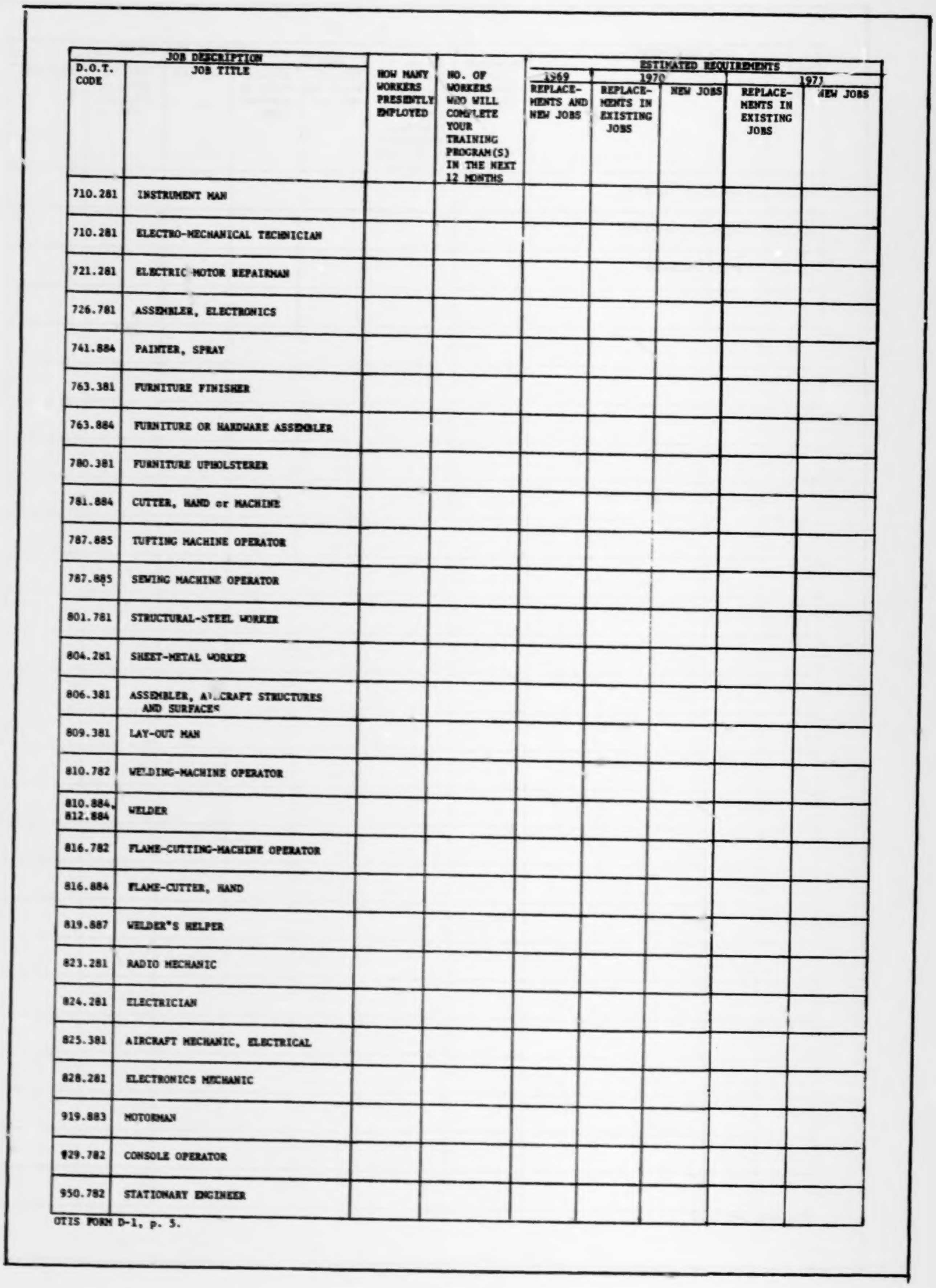
OTIS FORM D-1, p. 3.

Figure B-3. Demand Data Collection Instrument
(Page 3 of 15 pages)

JOB DESCRIPTION		HOW MANY WORKERS PRESENTLY EMPLOYED	NO. OF WORKERS WHO WILL COMPLETE YOUR TRAINING PROGRAM(S) IN THE NEXT 12 MONTHS	ESTIMATED REQUIREMENTS				
D.O.T. CODE	JOB TITLE			1969	1970		1971	
				REPLACEMENTS AND NEW JOBS	REPLACEMENTS IN EXISTING JOBS	NEW JOBS	REPLACEMENTS IN EXISTING JOBS	NEW JOBS
603 thru 609	MACHINE SET-UP OPERATOR							
603.280	PRECISION GRINDER (Machine Shop)							
609.885	MACHINE-TOOL OPERATOR, PRODUCTION							
611.782	FORGING-PRESS OPERATOR							
612.380	DIE SETTER (Forging)							
615.782	(POWER) SHEAR OPERATOR							
615.782	PUNCH-PRESS OPERATOR							
617.280	PRESS OPERATOR, HEAVY DUTY							
617.380	(POWER) BRAKE OPERATOR							
619.380	METAL FABRICATOR							
619.782	ROLL OPERATOR							
621.281	MECHANIC, AIRCRAFT AND ENGINE							
621.281	MECHANIC, AIRCRAFT JET ENGINE							
621.781	MECHANIC, AIRCRAFT ACCESSORIES							
625.281	MECHANIC, DIESEL							
637.281	MECHANIC, AIR-CONDITIONING OR REFRIGERATION							
638.281	MECHANIC, MAINTENANCE							
650.582	LINOTYPE OPERATOR							
651.782	CYLINDER-PRESSMAN							
651.782	OFFSET-PRESSMAN							
660.280	CABINETMAKER							
669.380	MILLMAN (Woodworking)							
677.782	CUTTING MACHINE OPERATOR (glass mfg.)							
689.584	CARPET INSPECTOR							
699.887	HELPER MACHIJE SHOP							
705.884	BENCH GRINDER							
706.884	ASSEMBLER PRODUCT							

OTIS FORM D-1, p. 4.

Figure B-3. Demand Data Collection Instrument
(Page 4 of 15 pages)



JOB DESCRIPTION		HOW MANY WORKERS PRESENTLY EMPLOYED	NO. OF WORKERS WHO WILL COMPLETE YOUR TRAINING PROGRAM(S) IN THE NEXT 12 MONTHS	ESTIMATED REQUIREMENTS				
D.O.T. CODE	JOB TITLE			1969	1970		1971	
				REPLACEMENTS AND NEW JOBS	REPLACEMENTS IN EXISTING JOBS	NEW JOBS	REPLACEMENTS IN EXISTING JOBS	NEW JOBS
710.281	INSTRUMENT MAN							
710.281	ELECTRO-MECHANICAL TECHNICIAN							
721.281	ELECTRIC MOTOR REPAIRMAN							
726.781	ASSEMBLER, ELECTRONICS							
741.884	PAINTER, SPRAY							
763.381	FURNITURE FINISHER							
763.884	FURNITURE OR HARDWARE ASSEMBLER							
780.381	FURNITURE UPHOLSTERER							
781.884	CUTTER, HAND or MACHINE							
787.885	TUFTING MACHINE OPERATOR							
787.885	SEWING MACHINE OPERATOR							
801.781	STRUCTURAL-STEEL WORKER							
804.281	SHEET-METAL WORKER							
806.381	ASSEMBLER, AIRCRAFT STRUCTURES AND SURFACES							
809.381	LAY-OUT MAN							
810.782	WELDING-MACHINE OPERATOR							
810.884, 812.884	WELDER							
816.782	FLAME-CUTTING-MACHINE OPERATOR							
816.884	FLAME-CUTTER, HAND							
819.887	WELDER'S HELPER							
823.281	RADIO MECHANIC							
824.281	ELECTRICIAN							
825.381	AIRCRAFT MECHANIC, ELECTRICAL							
828.281	ELECTRONICS MECHANIC							
919.883	MOTORMAN							
929.782	CONSOLE OPERATOR							
950.782	STATIONARY ENGINEER							

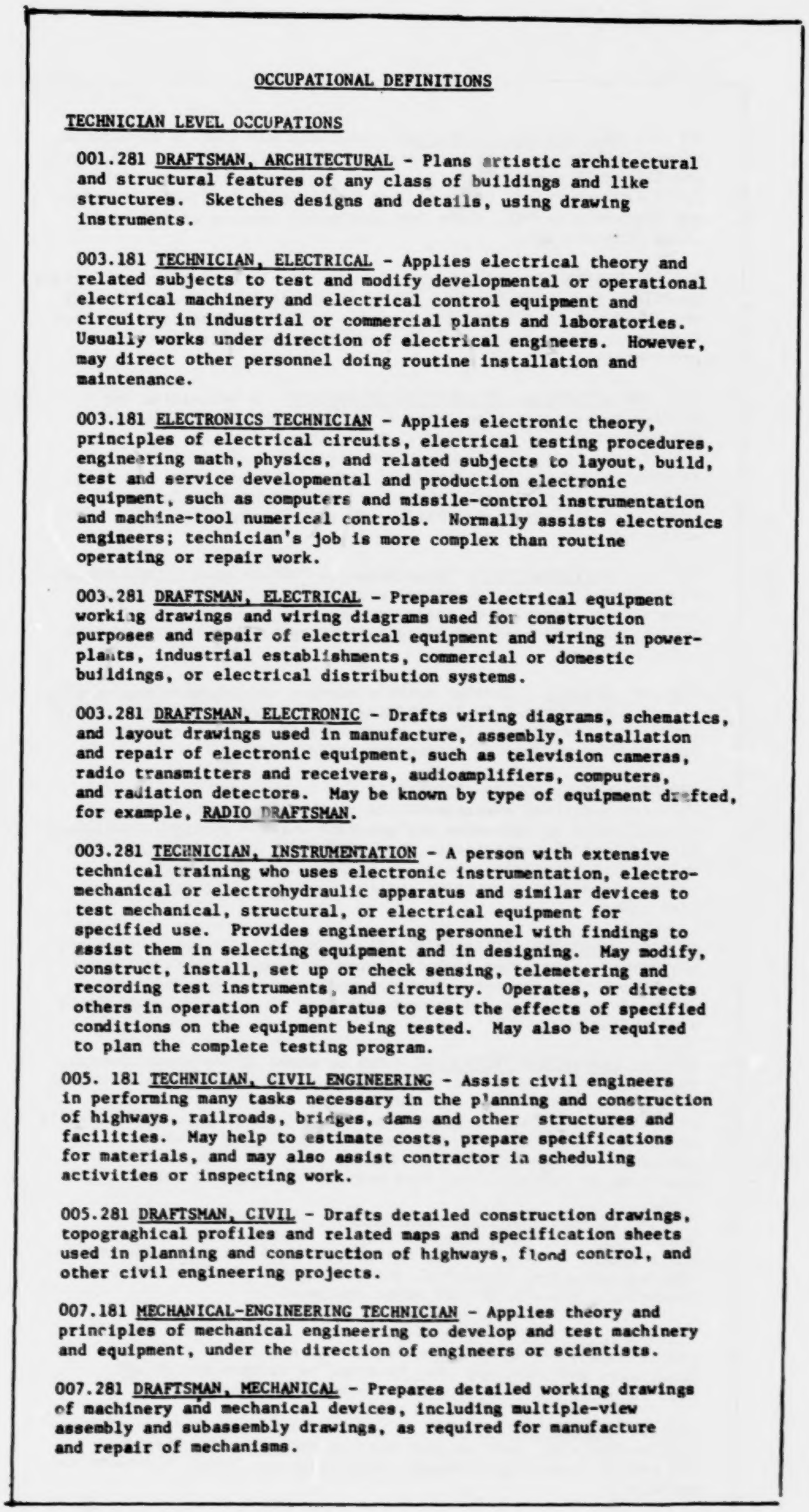
OTIS FORM D-1, p. 5.

Figure B-3. Demand Data Collection Instrument
(Page 5 of 15 pages)

JOB DESCRIPTION				ESTIMATED REQUIREMENTS				
D.O.T. CODE	JOB TITLE	HOW MANY WORKERS PRESENTLY EMPLOYED	NO. OF WORKERS WHO WILL COMPLETE YOUR TRAINING PROGRAM(S) IN THE NEXT 12 MONTHS	1969	1970		1971	
				REPLACE-MENTS AND NEW JOBS	REPLACE-MENTS IN EXISTING JOBS	NEW JOBS	REPLACE-MENTS IN EXISTING JOBS	NEW JOBS
952.782	POWER PLANT OPERATOR							
957.282	TRANSMITTER OPERATOR							
972.382	PHOTOLITHOGRAPHER							

OTIS FORM D-1, p. 6.

Figure B-3. Demand Data Collection Instrument
(Page 6 of 15 pages)



OCCUPATIONAL DEFINITIONS

TECHNICIAN LEVEL OCCUPATIONS

001.281 DRAFTSMAN, ARCHITECTURAL - Plans artistic architectural and structural features of any class of buildings and like structures. Sketches designs and details, using drawing instruments.

003.181 TECHNICIAN, ELECTRICAL - Applies electrical theory and related subjects to test and modify developmental or operational electrical machinery and electrical control equipment and circuitry in industrial or commercial plants and laboratories. Usually works under direction of electrical engineers. However, may direct other personnel doing routine installation and maintenance.

003.181 ELECTRONICS TECHNICIAN - Applies electronic theory, principles of electrical circuits, electrical testing procedures, engineering math, physics, and related subjects to layout, build, test and service developmental and production electronic equipment, such as computers and missile-control instrumentation and machine-tool numerical controls. Normally assists electronics engineers; technician's job is more complex than routine operating or repair work.

003.281 DRAFTSMAN, ELECTRICAL - Prepares electrical equipment working drawings and wiring diagrams used for construction purposes and repair of electrical equipment and wiring in powerplants, industrial establishments, commercial or domestic buildings, or electrical distribution systems.

003.281 DRAFTSMAN, ELECTRONIC - Drafts wiring diagrams, schematics, and layout drawings used in manufacture, assembly, installation and repair of electronic equipment, such as television cameras, radio transmitters and receivers, audioamplifiers, computers, and radiation detectors. May be known by type of equipment drafted, for example, RADIO DRAFTSMAN.

003.281 TECHNICIAN, INSTRUMENTATION - A person with extensive technical training who uses electronic instrumentation, electromechanical or electrohydraulic apparatus and similar devices to test mechanical, structural, or electrical equipment for specified use. Provides engineering personnel with findings to assist them in selecting equipment and in designing. May modify, construct, install, set up or check sensing, telemetering and recording test instruments, and circuitry. Operates, or directs others in operation of apparatus to test the effects of specified conditions on the equipment being tested. May also be required to plan the complete testing program.

005. 181 TECHNICIAN, CIVIL ENGINEERING - Assist civil engineers in performing many tasks necessary in the planning and construction of highways, railroads, bridges, dams and other structures and facilities. May help to estimate costs, prepare specifications for materials, and may also assist contractor in scheduling activities or inspecting work.

005.281 DRAFTSMAN, CIVIL - Drafts detailed construction drawings, topograghical profiles and related maps and specification sheets used in planning and construction of highways, flood control, and other civil engineering projects.

007.181 MECHANICAL-ENGINEERING TECHNICIAN - Applies theory and principles of mechanical engineering to develop and test machinery and equipment, under the direction of engineers or scientists.

007.281 DRAFTSMAN, MECHANICAL - Prepares detailed working drawings of machinery and mechanical devices, including multiple-view assembly and subassembly drawings, as required for manufacture and repair of mechanisms.

Figure B-3. Demand Data Collection Instrument
(Page 7 of 15 pages)

001.281 **WELL LOGGING TECHNICIAN** - Analyzes mud that is circulated through oil or gas-well boreholes during drilling operations, using special testing equipment, to detect productive stratum: Sets up field laboratory and mechanical and electrical testing instruments and equipment at well sites for continuous testing of mud as it comes from the well.

010.281 **DRAFTSMAN, GEOLOGICAL** - Specializes in making maps, diagrams, profiles, and cross sections to represent geological stratigraphy and locations of oil and gas deposits by correlating data obtained from topographical surveys, from well logs, and from geophysical prospecting.

012. 288 **INDUSTRIAL ENGINEERING TECHNICIAN** - A technician who studies and records time, motion, methods, and speed involved in the performance of maintenance, production, clerical, and other worker activities to establish the standard production rate. Recommends revision of methods of operation or material handling, alterations in equipment layout, or other changes to increase production or improve standards. He aids in planning work assignments.

017.281 **DRAFTSMAN, MAP** - (Also known as Cartographer or Map Maker) - Draws maps of cities, counties, states, and other areas showing location and identity of roads, communities, commercial or industrial structures and installations, political boundaries and other features.

018.188 **SURVEYOR** - Surveys earth's surface and oversees engineering survey party engaged in determining exact location and measurements of points, elevations, lines, areas used for construction, map-making, land valuation, mining and other purposes.

019.281 **QUALITY CONTROL TECHNICIAN** - A technician who tests and inspects specified characteristics of products at various stages of production to determine and maintain desired quality. Evaluates data and writes summaries to show conformity to or deviation from established standards. Suggests modification of production or quality standards to achieve optimum quality and to increase efficiency.

020.188 **PROGRAMER, ENGINEERING AND SCIENTIFIC** - Converts scientific, engineering, and other technical problem formulation to a format processable by computer. Combines and applies a knowledge of advanced mathematics and an understanding of computer capabilities and limitations.

029.181 **LABORATORY TECHNICIAN** - May be known as assistant chemist, research technician or tester. Performs laboratory tests according to prescribed standards to determine the chemical composition or characteristics of a given substance for purposes such as quality control, process control, product development, or determining conformity to specifications. May test raw materials for such qualities as permeability, load bearing capacity, or cohesiveness.

139.288 **WRITER, TECHNICAL PUBLICATIONS** Also known as Handbook Writer, Service Publications Wrtier, or Technical Editor. Writes and prepares service manuals and related publications concerned with installation, operation, and maintenance of electronic, electrical, mechanical, and other equipment.

141.081 **ILLUSTRATOR** - A commercial artist who draws and paints illustrations for advertisements, books, magazines, posters, billboards and catalogs. May be known as Fashion Artist and draw figures, garments and accessories for newspaper ads.

141.081 **LAY-OUT MAN** - (print. & pub.) - Plans page layouts of illustrative material, such as sketches, photographs, and diagrams, for use in preparing newspaper advertisements, books, and technical manuals.

Figure B-3. Demand Data Collection Instrument
(Page 8 of 15 pages)

143. PHOTOGRAPHER - CAMERAMAN AND ALLIED OCCUPATIONS - Photograph people, events, fictionalized scenes, materials or products with still or motion picture cameras. May be called a News, Commercial or Aerial Photographer, or Television Cameraman.

199.381 RADIOGRAPHER or INDUSTRIAL X-RAY OPERATOR - Takes radiographs or X-rays of metal castings, weldments, pipes, machinery and structural members to detect flaws, cracks, porosity and presence of foreign objects.

PROCESSING OCCUPATIONS

424.883 HEAVY EQUIPMENT OPERATOR - Operates several types of power construction equipment, including compressors, pumps, hoists, derricks, cranes, shovels, tractors, scrapers or motor graders to excavate and grade earth, erect structural and reinforcing steel and pour concrete.

500.380 PLATER (Electroplating) - Sets up and controls plating equipment to coat metal object electrolytically with chromium, copper, cadmium or other metal to provide protective surfaces or to build up worn surfaces according to specifications.

502.381 MOLDER, PUNCH (Aircraft)- Casts male dies (punches) used in stamping aircraft parts from sheet metal. May be designated according to type of metal molded; as for example, a Cerrobend-Die Caster.

504.782 HEAT TREATER - Controls heat-treating furnaces and quenching equipment to alter physical and chemical properties of a variety of metal objects by methods of controlled heating and cooling, such as hardening, tempering, annealing, casehardening and normalizing.

514.884 CASTER _ (Ore dressing smelting and refining) - A metal pourer. Casts non-ferrous metal into pigs and transports them to storage, using handtools and forklift.

515.782 GRINDING-MILL OPERATOR - Operates a panel board to control machinery and equipment, such as conveyor belts, vibrating feeders, rod and ball mills, centrifugal separators, distributors, magnetic separators, and pumps to grind ore and to separate iron particles from gangue.

518.381 COREMAKER - Makes sand cores used in molds to form holes or hollows in metal casting.

518.381 MOULDER - Makes sand molds for production of metal castings, using handtools, power tools, patterns and flasks and applying knowledge of variables such as metal characteristics, molding sand, contours of patterns, and pouring procedures.

521.782 GRINDER OPERATOR - Grinds grain into meal or flour, adjusting feed chutes to regulate flow of grain to rollers. Adjusts roller pressure for grain size and hardness of each batch. Inspects flour or meal by sifting it through fingers, winnows, chaff from sample to estimate yield, adjusting rollers accordingly. Opens and closes spouts to route grain to various grinders and sifters.

525.387 GRADER, MEAT - Grades carcasses as to sales value, basing evaluation on age, sex, build, shape and thickness of meat, amount and distribution, color and texture of fat, and marbling of lean meat.

525.884 BONER OR SKINNER - Cuts bone from and trims standard cuts of meat, or severs and removes from carcasses heads, tails, lungs, and genitalia, severs and ties gullet to prevent leakage of fluids, slits cattle wombs and removes the skins slunk and slits hide of carcass and pulls it loose, by hand or using pinchers, breaking connective tissue.

526.781 BAKER - Weighs or measures ingredients according to formula. Combines and mixes materials to make batters, doughs, fillings and icings. Rolls, cuts, and shapes dough and completes process of baking. Checks oven temperature and makes adjustments as necessary. Applies glaze, icing, or other topping to baked goods. May specialize in one type of product.

Figure B-3. Demand Data Collection Instrument
(Page 9 of 15 pages)

529.381 CANDY MAKER - Mixes together and cooks candy ingredients by following, modifying, or formulating recipes to produce product of specified flavor, texture and color.

542.280 STILLMAN - Analyzes specifications and controls continuous operation of petroleum refining and processing units to produce products, such as gasoline or lubricating oils, by such methods as distillation, polymerization, absorption, and the like. May be designated according to process involved or plant operated as Absorption-Plant Operator or Cracking Unit - Stillman.

549.380 PUMPMAN - Plans movement of crude, semiprocessed, and finished petroleum products, water, and chemical solutions through lines to processing, storage and shipping units, according to interconnections and capacities of pipelines, valve manifolds, pumps and tankage, and synchronizes it with other pumphouses to ensure continuous flow and minimal contamination of products.

572.782 BATCH AND FURNACE MAN (glass mfg.) - Controls automatic equipment to weigh, mix, and melt ingredients to make glass. Collects sample of molten glass for laboratory analysis, and records production data.

575.781 CONCRETE-STONE FABRICATOR - Casts mixture of concrete and aggregate in a mold to form plain or decorative structural panels following drawings, specifications, and approved samples.

575.782 BRICK-AND-TILE-MAKING MACHINE OPERATOR - Sets up and operates series of machines to mix ingredients, extrude clay mixture, and to cut extruded column into brick and tile products. Examines and records production

575.885 CONCRETE PIPE MAKING MACHINE OPERATOR - Tends machine that makes concrete draintile or pipe. May be designated according to type of product made as Drain-Tile Machine Operator; or according to type of machine tended as Packerhead-Machine Operator.

582.183 DYER - Prepares dye formulas to conform with customer and plant specifications. Selects formula or prepares formula, employing knowledge of characteristics of dyes, and resine, to produce required properties and shade at lowest cost. Also, schedules production.

584.782 ROLL COATING-MACHINE OPERATOR OR COATING MACHINE OPERATOR - Operates machine to coat rolls of woven fiber rugs with vinyl or other coatings to prolong life of fiber and retard soiling.

585.885 SHEARING MACHINE OPERATOR - Tends machine that shears nap, loose threads and knots from cloth surface to give uniform finish and texture.

589.130 CARPET FINISHER - Coordinates activities of and supervises workers engaged in finishing processes in manufacture of carpet and rugs.

MACHINE TRADES OCCUPATIONS

600.280 MACHINIST (All-Around) - Studies specifications, blueprints, or sketches, plans work sequence; measures and marks dimensions and reference points to lay out stock for machining. Sets up and operates lathe, milling machine, shaper, or grinder to machine parts to specifications. Uses handtools, such as files, scrapers, and wrenches, to fit and assemble parts, verifying dimensions and alignment with micrometers, height gages, and gage blocks.

600.280 INSTRUMENT MAKER - Makes, modified, or repairs mechanical instruments or mechnaical assemblies of electrical or electronic instruments such as barographs, seismographs, thermostats, and servomechnaisms, using machine tools, handtools, welding and heat-treating equipment, and precision measuring instruments according to blueprints or sketches.

600.281 MACHINE BUILDER - Fits and assembles metal components according to assembly blueprints, manuals and knowledge of machine construction to construct, rebuild, and repair machines and equipment using hand or power tools.

600.381 LAY-OUT MAN - (Machine Shop) - Lays out metal stock or workpieces such as castings, plates, or machine parts, to indicate location and dimensions of processing to be done such as machining, welding or assembly.

Figure B-3. Demand Data Collection Instrument
(Page 10 of 15 pages)

601.280 TOOL-AND-DIE MAKER - Analyzes a variety of specifications, lays out metal stock, sets up and operates machine tools, and fits and assembles parts to make and repair metalworking dies, cutting tools, jigs, fixtures, gages, and machinists' handtools, applying a knowledge of design and construction, shop mathematics, metal properties, and machinery and assembly procedures.

601.381 TEMPLATE MAKER - Designs and fabricates templates of wood, paper, sheet metal and plastic used for laying out reference points and dimensions on metal plates, sheets, tubes and structural shapes for fabricating, welding, and assembling into structural metal products.

603 THRU 609 MACHINE SET-UP OPERATOR - A group of occupations that are concerned with setting up and operating one or more machines; for example, engine lathe, turret lathe, boring mill, milling machine, radial drill press, gear-cutting machine, gear jobber, screw-machine and machines of similar complexity. Set-up operator prepares the machine tools for production operators. May also instruct and supervise them. When not setting up machines, he may work as a regular operator though still in a "senior" or "leader" capacity.

603.280 PRECISION GRINDER (Machine Shop) - Operates one of several types of precision grinding machines to grind internal and external surfaces of metal parts to a smooth and even finish and to required dimensions. Primarily does a finishing operation on previously machines parts, and job consists of applying abrasive wheels rotating at high speeds to the less-grinder, cylindrical-grinder, external-grinder, internal-grinder, surface-grinder, universal-grinder, and other production grinding machines such as drill, broach, and gear cutter grinders.

609.885 MACHINE-TOOL OPERATOR, PRODUCTION - Tends one or more of a variety of power-driven machine tools, including lathes, drill-presses, milling-machines, grinders, screw-machines or other special purpose machines to machine metal work pieces to specifications. Machines have been previously set up and this operator makes only minor adjustments.

611.782 FORGING-PRESS OPERATOR - Sets up and operates closed-die power press to produce metal forgings, following work order specifications and using measuring instruments and handtools.

612.380 DIE SETTER (Forging) - Sets up forging machines, such as forging presses, coining presses, drophammers, forging rolls, and upsetters, following blueprint, work order, and data-chart specifications, and using handtools and measuring instruments.

615.782 (POWER) SHEAR OPERATOR - Sets up and operates power shear to cut metal objects, such as plates, sheets, billets, or bars to specified dimensions and angle.

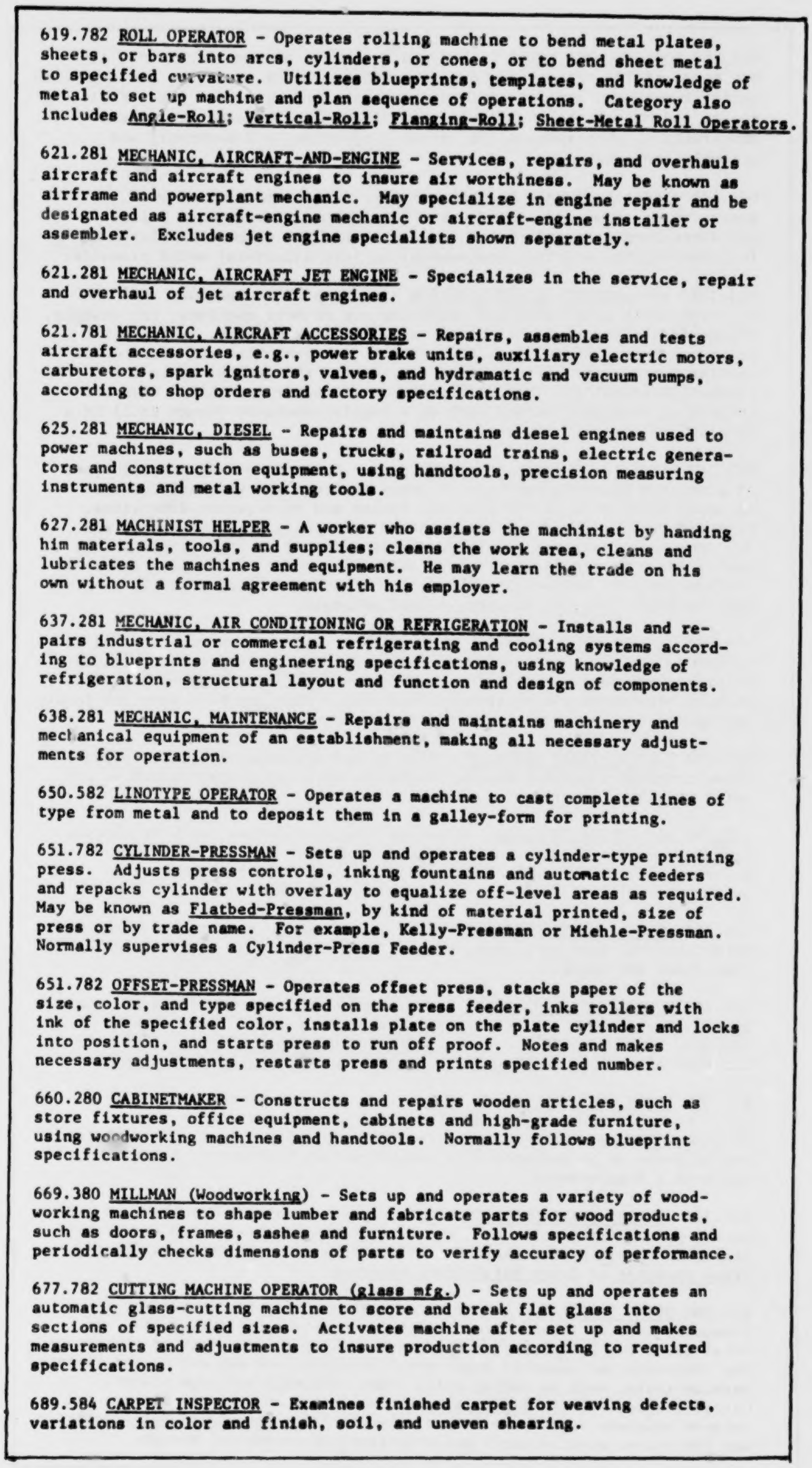
615.782 PUNCH-PRESS OPERATOR - Sets up and operates power press to trim, punch, shape, notch, draw or crimp metal stock between dies. May be known by type of machine used as Multi-Punch-Press Operator, or by function of machine as Draw-Press Operator or Forming-Press Operator.

617.280 PRESS OPERATOR, HEAVY DUTY - Sets up and operates heavy-duty press to bend, form, and straighten metal plates, structural shapes, forgings, and weldments as specified by blueprints, layout and templates. May be known as an operator of a bending press, bull-press, hydraulic-press or a toggle-press.

617.380 (POWER) BRAKE OPERATOR - Sets up and operates power brake to bend, notch, punch, form, roll, arc, or straighten metal plates and structural shapes to blueprint and sketch specifications. May be known as Press Brake Operator or Sheet Metal Brake Operator.

619.380 METAL FABRICATOR - Fabricates and assembles structural metal products, such as framework or shells for machinery, tanks, ovens, and metal parts for buildings and bridges according to job order or blueprints. May fabricate and assemble sheet metal products, and may set up and operate machine tools, such as radial drill press, end mill and edge planer. Category also includes Boilermaker who assembles and repairs boilers and related pressure vessels in shops. Also includes Ornamental-Metal Worker who fabricates architectural building parts of ornamental design.

Figure B-3. Demand Data Collection Instrument
(Page 11 of 15 pages)



619.782 ROLL OPERATOR - Operates rolling machine to bend metal plates, sheets, or bars into arcs, cylinders, or cones, or to bend sheet metal to specified curvature. Utilizes blueprints, templates, and knowledge of metal to set up machine and plan sequence of operations. Category also includes Angle-Roll; Vertical-Roll; Flanging-Roll; Sheet-Metal Roll Operators.

621.281 MECHANIC, AIRCRAFT-AND-ENGINE - Services, repairs, and overhauls aircraft and aircraft engines to insure air worthiness. May be known as airframe and powerplant mechanic. May specialize in engine repair and be designated as aircraft-engine mechanic or aircraft-engine installer or assembler. Excludes jet engine specialists shown separately.

621.281 MECHANIC, AIRCRAFT JET ENGINE - Specializes in the service, repair and overhaul of jet aircraft engines.

621.781 MECHANIC, AIRCRAFT ACCESSORIES - Repairs, assembles and tests aircraft accessories, e.g., power brake units, auxiliary electric motors, carburetors, spark ignitors, valves, and hydramatic and vacuum pumps, according to shop orders and factory specifications.

625.281 MECHANIC, DIESEL - Repairs and maintains diesel engines used to power machines, such as buses, trucks, railroad trains, electric generators and construction equipment, using handtools, precision measuring instruments and metal working tools.

627.281 MACHINIST HELPER - A worker who assists the machinist by handing him materials, tools, and supplies; cleans the work area, cleans and lubricates the machines and equipment. He may learn the trade on his own without a formal agreement with his employer.

637.281 MECHANIC, AIR CONDITIONING OR REFRIGERATION - Installs and repairs industrial or commercial refrigerating and cooling systems according to blueprints and engineering specifications, using knowledge of refrigeration, structural layout and function and design of components.

638.281 MECHANIC, MAINTENANCE - Repairs and maintains machinery and mechanical equipment of an establishment, making all necessary adjustments for operation.

650.582 LINOTYPE OPERATOR - Operates a machine to cast complete lines of type from metal and to deposit them in a galley-form for printing.

651.782 CYLINDER-PRESSMAN - Sets up and operates a cylinder-type printing press. Adjusts press controls, inking fountains and automatic feeders and repacks cylinder with overlay to equalize off-level areas as required. May be known as Flatbed-Pressman, by kind of material printed, size of press or by trade name. For example, Kelly-Pressman or Miehle-Pressman. Normally supervises a Cylinder-Press Feeder.

651.782 OFFSET-PRESSMAN - Operates offset press, stacks paper of the size, color, and type specified on the press feeder, inks rollers with ink of the specified color, installs plate on the plate cylinder and locks into position, and starts press to run off proof. Notes and makes necessary adjustments, restarts press and prints specified number.

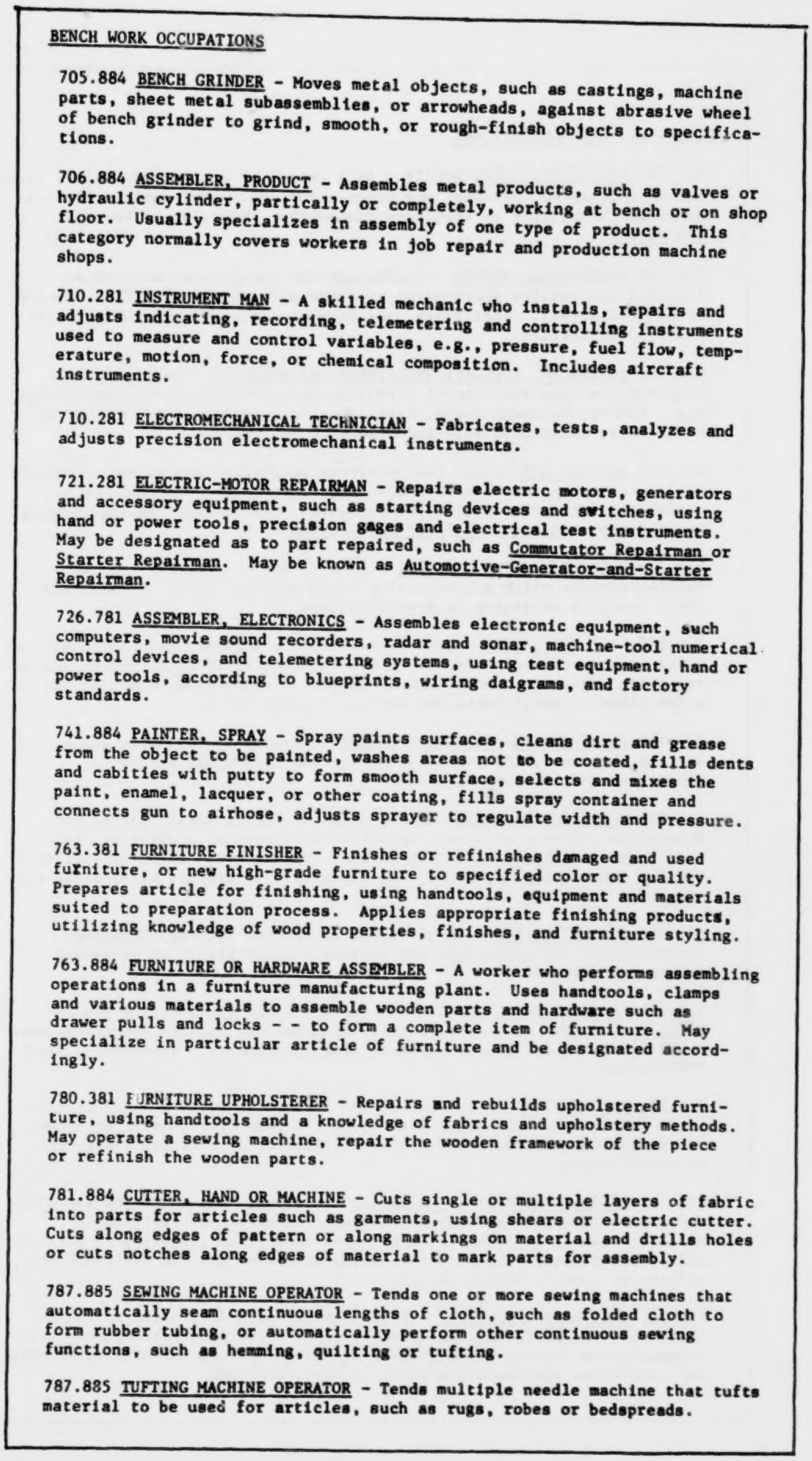
660.280 CABINETMAKER - Constructs and repairs wooden articles, such as store fixtures, office equipment, cabinets and high-grade furniture, using woodworking machines and handtools. Normally follows blueprint specifications.

669.380 MILLMAN (Woodworking) - Sets up and operates a variety of woodworking machines to shape lumber and fabricate parts for wood products, such as doors, frames, sashes and furniture. Follows specifications and periodically checks dimensions of parts to verify accuracy of performance.

677.782 CUTTING MACHINE OPERATOR (glass mfg.) - Sets up and operates an automatic glass-cutting machine to score and break flat glass into sections of specified sizes. Activates machine after set up and makes measurements and adjustments to insure production according to required specifications.

689.584 CARPET INSPECTOR - Examines finished carpet for weaving defects, variations in color and finish, soil, and uneven shearing.

Figure B-3. Demand Data Collection Instrument
(Page 12 of 15 pages)



BENCH WORK OCCUPATIONS

705.884 BENCH GRINDER - Moves metal objects, such as castings, machine parts, sheet metal subassemblies, or arrowheads, against abrasive wheel of bench grinder to grind, smooth, or rough-finish objects to specifications.

706.884 ASSEMBLER, PRODUCT - Assembles metal products, such as valves or hydraulic cylinder, partically or completely, working at bench or on shop floor. Usually specializes in assembly of one type of product. This category normally covers workers in job repair and production machine shops.

710.281 INSTRUMENT MAN - A skilled mechanic who installs, repairs and adjusts indicating, recording, telemetering and controlling instruments used to measure and control variables, e.g., pressure, fuel flow, temperature, motion, force, or chemical composition. Includes aircraft instruments.

710.281 ELECTROMECHANICAL TECHNICIAN - Fabricates, tests, analyzes and adjusts precision electromechanical instruments.

721.281 ELECTRIC-MOTOR REPAIRMAN - Repairs electric motors, generators and accessory equipment, such as starting devices and switches, using hand or power tools, precision gages and electrical test instruments. May be designated as to part repaired, such as Commutator Repairman or Starter Repairman. May be known as Automotive-Generator-and-Starter Repairman.

726.781 ASSEMBLER, ELECTRONICS - Assembles electronic equipment, such computers, movie sound recorders, radar and sonar, machine-tool numerical control devices, and telemetering systems, using test equipment, hand or power tools, according to blueprints, wiring daigrams, and factory standards.

741.884 PAINTER, SPRAY - Spray paints surfaces, cleans dirt and grease from the object to be painted, washes areas not to be coated, fills dents and cabities with putty to form smooth surface, selects and mixes the paint, enamel, lacquer, or other coating, fills spray container and connects gun to airhose, adjusts sprayer to regulate width and pressure.

763.381 FURNITURE FINISHER - Finishes or refinishes damaged and used furniture, or new high-grade furniture to specified color or quality. Prepares article for finishing, using handtools, equipment and materials suited to preparation process. Applies appropriate finishing products, utilizing knowledge of wood properties, finishes, and furniture styling.

763.884 FURNITURE OR HARDWARE ASSEMBLER - A worker who performs assembling operations in a furniture manufacturing plant. Uses handtools, clamps and various materials to assemble wooden parts and hardware such as drawer pulls and locks - - to form a complete item of furniture. May specialize in particular article of furniture and be designated accordingly.

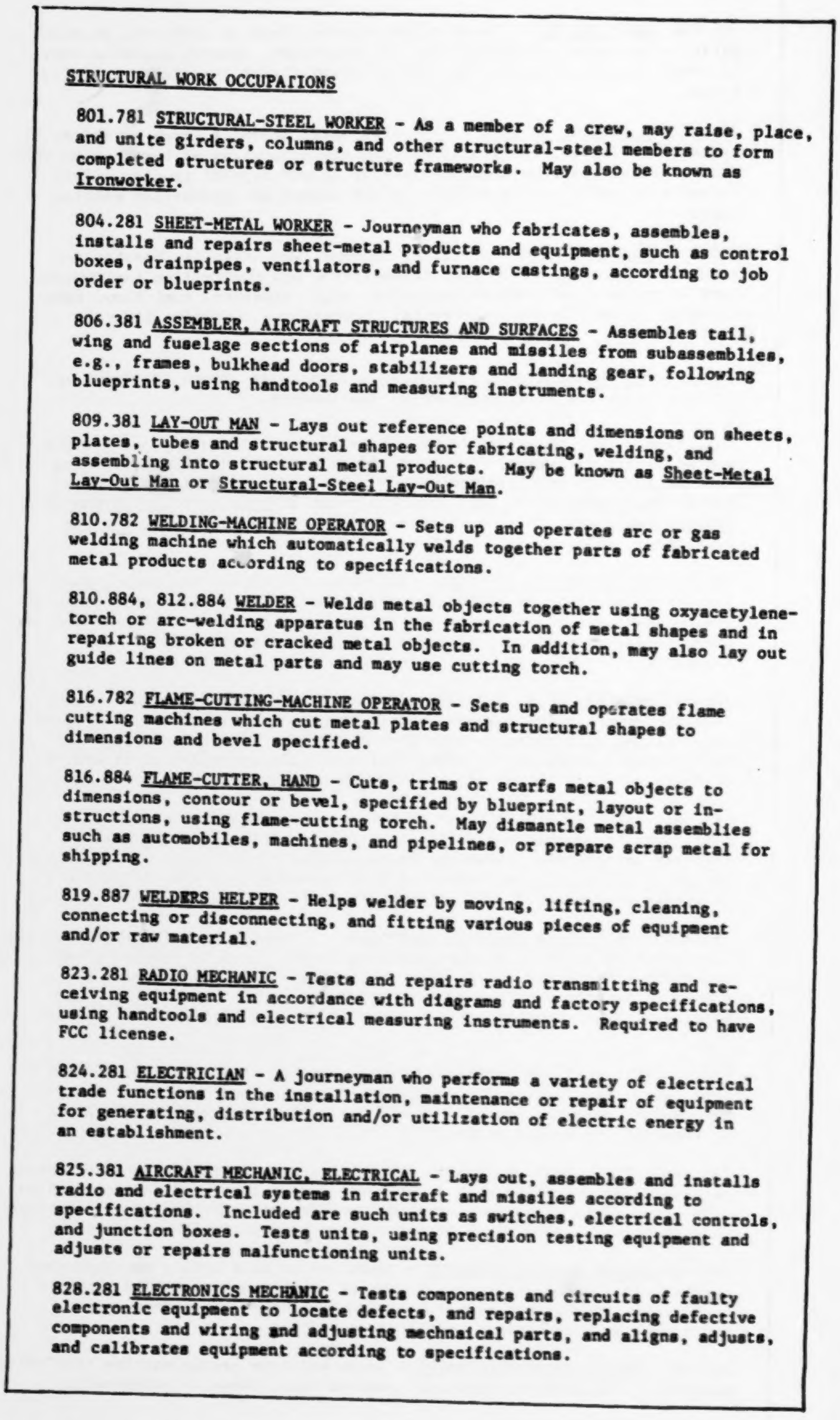
780.381 FURNITURE UPHOLSTERER - Repairs and rebuilds upholstered furniture, using handtools and a knowledge of fabrics and upholstery methods. May operate a sewing machine, repair the wooden framework of the piece or refinish the wooden parts.

781.884 CUTTER, HAND OR MACHINE - Cuts single or multiple layers of fabric into parts for articles such as garments, using shears or electric cutter. Cuts along edges of pattern or along markings on material and drills holes or cuts notches along edges of material to mark parts for assembly.

787.885 SEWING MACHINE OPERATOR - Tends one or more sewing machines that automatically seam continuous lengths of cloth, such as folded cloth to form rubber tubing, or automatically perform other continuous sewing functions, such as hemming, quilting or tufting.

787.885 TUFTING MACHINE OPERATOR - Tends multiple needle machine that tufts material to be used for articles, such as rugs, robes or bedspreads.

Figure B-3. Demand Data Collection Instrument
(Page 13 of 15 pages)



STRUCTURAL WORK OCCUPATIONS

801.781 **STRUCTURAL-STEEL WORKER** - As a member of a crew, may raise, place, and unite girders, columns, and other structural-steel members to form completed structures or structure frameworks. May also be known as **Ironworker**.

804.281 **SHEET-METAL WORKER** - Journeyman who fabricates, assembles, installs and repairs sheet-metal products and equipment, such as control boxes, drainpipes, ventilators, and furnace castings, according to job order or blueprints.

806.381 **ASSEMBLER, AIRCRAFT STRUCTURES AND SURFACES** - Assembles tail, wing and fuselage sections of airplanes and missiles from subassemblies, e.g., frames, bulkhead doors, stabilizers and landing gear, following blueprints, using handtools and measuring instruments.

809.381 **LAY-OUT MAN** - Lays out reference points and dimensions on sheets, plates, tubes and structural shapes for fabricating, welding, and assembling into structural metal products. May be known as **Sheet-Metal Lay-Out Man** or **Structural-Steel Lay-Out Man**.

810.782 **WELDING-MACHINE OPERATOR** - Sets up and operates arc or gas welding machine which automatically welds together parts of fabricated metal products according to specifications.

810.884, 812.884 **WELDER** - Welds metal objects together using oxyacetylene-torch or arc-welding apparatus in the fabrication of metal shapes and in repairing broken or cracked metal objects. In addition, may also lay out guide lines on metal parts and may use cutting torch.

816.782 **FLAME-CUTTING-MACHINE OPERATOR** - Sets up and operates flame cutting machines which cut metal plates and structural shapes to dimensions and bevel specified.

816.884 **FLAME-CUTTER, HAND** - Cuts, trims or scarfs metal objects to dimensions, contour or bevel, specified by blueprint, layout or instructions, using flame-cutting torch. May dismantle metal assemblies such as automobiles, machines, and pipelines, or prepare scrap metal for shipping.

819.887 **WELDERS HELPER** - Helps welder by moving, lifting, cleaning, connecting or disconnecting, and fitting various pieces of equipment and/or raw material.

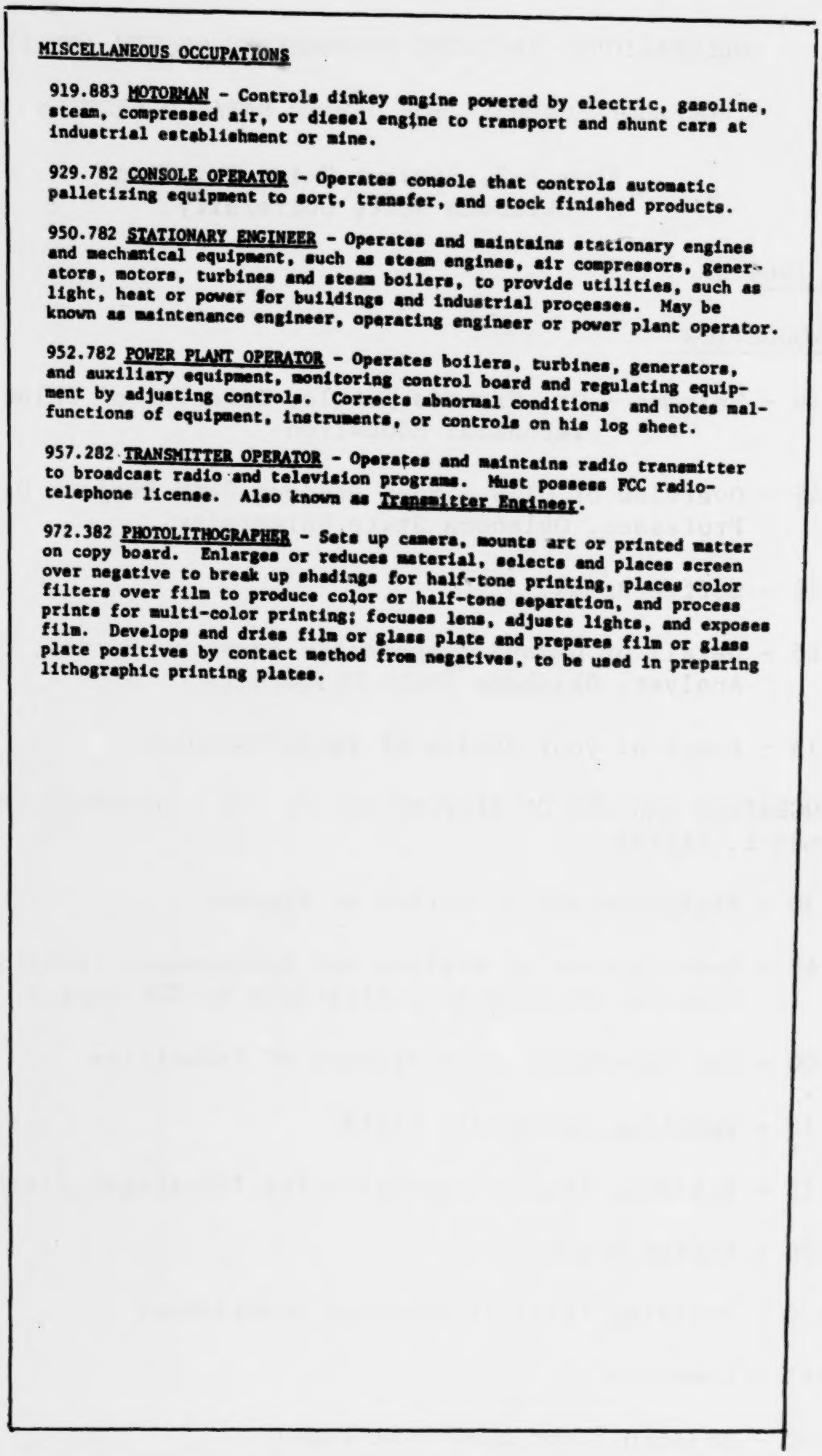
823.281 **RADIO MECHANIC** - Tests and repairs radio transmitting and receiving equipment in accordance with diagrams and factory specifications, using handtools and electrical measuring instruments. Required to have FCC license.

824.281 **ELECTRICIAN** - A journeyman who performs a variety of electrical trade functions in the installation, maintenance or repair of equipment for generating, distribution and/or utilization of electric energy in an establishment.

825.381 **AIRCRAFT MECHANIC, ELECTRICAL** - Lays out, assembles and installs radio and electrical systems in aircraft and missiles according to specifications. Included are such units as switches, electrical controls, and junction boxes. Tests units, using precision testing equipment and adjusts or repairs malfunctioning units.

828.281 **ELECTRONICS MECHANIC** - Tests components and circuits of faulty electronic equipment to locate defects, and repairs, replacing defective components and wiring and adjusting mechnaical parts, and aligns, adjusts, and calibrates equipment according to specifications.

Figure B-3. Demand Data Collection Instrument
(Page 14 of 15 pages)



MISCELLANEOUS OCCUPATIONS

919.883 **MOTORMAN** - Controls dinkey engine powered by electric, gasoline, steam, compressed air, or diesel engine to transport and shunt cars at industrial establishment or mine.

929.782 **CONSOLE OPERATOR** - Operates console that controls automatic palletizing equipment to sort, transfer, and stock finished products.

950.782 **STATIONARY ENGINEER** - Operates and maintains stationary engines and mechanical equipment, such as steam engines, air compressors, generators, motors, turbines and steam boilers, to provide utilities, such as light, heat or power for buildings and industrial processes. May be known as maintenance engineer, operating engineer or power plant operator.

952.782 **POWER PLANT OPERATOR** - Operates boilers, turbines, generators, and auxiliary equipment, monitoring control board and regulating equipment by adjusting controls. Corrects abnormal conditions and notes malfunctions of equipment, instruments, or controls on his log sheet.

957.282 **TRANSMITTER OPERATOR** - Operates and maintains radio transmitter to broadcast radio and television programs. Must possess FCC radiotelephone license. Also known as **Transmitter Engineer**.

972.382 **PHOTOLITHOGRAPHER** - Sets up camera, mounts art or printed matter on copy board. Enlarges or reduces material, selects and places screen over negative to break up shadings for half-tone printing, places color filters over film to produce color or half-tone separation, and process prints for multi-color printing; focuses lens, adjusts lights, and exposes film. Develops and dries film or glass plate and prepares film or glass plate positives by contact method from negatives, to be used in preparing lithographic printing plates.

Figure B-3. Demand Data Collection Instrument
(Page 15 of 15 pages)

OCCUPATIONAL TRAINING INFORMATION SYSTEM (OTIS)

WORKSHOP SCHEDULE FOR DEMAND DATA COLLECTION

Room B-3, Student Union Building
Oklahoma State University

June 9, 1969

I. INTRODUCTION

9:30 - Welcome - Dr. Francis Tuttle, Director of Oklahoma Vocational-Technical Education

9:45 - Overview of OTIS - Paul Braden, OTIS Project Director, Associate Professor, Oklahoma State University

10:45 - Coffee Break

11:15 - Detail of Demand Component - James L. Harris, OTIS Systems Analyst, Oklahoma State University

12:15 - Lunch at your choice of establishments

II. GEOGRAPHIC REGIONS OF RESPONSIBILITY FOR INDUSTRIAL COORDINATORS - James L. Harris

1:30 - Rationale for Selection of Regions

1:40 - Descriptions of Regions and Assignments (additional comments about Economic Developments Districts by EDD reps.)

2:00 - Key Personnel and Addresses of Industries

2:10 - Updating Industrial Lists

2:15 - Building Trial Itineraries for Industrial Visits

3:00 - Coffee Break

3:30 - Building Trial Itineraries (continued)

4:45 - Comments

5:00 - Adjourn (Continued Next Page)

Figure B-4. Agenda for Data Collection Training Seminar

June 10, 1969

III. QUESTIONNAIRE FOR DEMAND ESTIMATES - Krishan Paul, OTIS Programmer-Analyst, Oklahoma State University

9:00 - Overview of Questionnaire

9:10 - Explanation of General Information on Cover Sheet of Questionnaire

9:20 - Rationale for Selection of Jobs to be Surveyed

9:30 - Rationale for Time Periods to be Surveyed

9:50 - Explanation of D.O.T. Codes

10:05 - Explanation of Job Descriptions

10:15 - How to Add Jobs Which Are Not Printed on Forms

10:30 - Coffee Break

IV. INTERVIEW TECHNIQUES - Gordon Pulliam, Industrial Coordinator, State Vocational-Technical Department

11:00 - Introduction to Interview Techniques

12:00 - Practice Interviews (role play)

12:30 - Lunch

1:30 - Practice Interviews (Continued)

3:00 - Coffee Break

V. ADMINISTRATIVE CONCERNS - Donna Martin, OTIS Project Economist

3:30 - Possible Problems

3:40 - Who to Call in Case of Problems

3:45 - How to Use WATS line

4:00 - Pay Procedures - Larry Tomlinson, Accountant, Research Foundation, Oklahoma State University

4:15 - Travel Vouchers, Reimbursement Periods, and Practice Completing Forms

4:30 - Summary Comments - Dr. Braden

5:00 - Adjourn

Figure B-4. Continued

1. Assign form number
2. Assign SIC code
3. Assign DOT codes to write-in jobs
4. Code data
5. Keypunch A, B and C cards
6. Keypunch D cards
7. Sort and merge A, B and C cards on county and form number
8. Sort D cards on county and firm number
9. Transfer A, B and C cards to computer tape 1
10. Transfer D cards to computer tape 2
11. Merge Tape 1 and tape 2 to form tape 3
12. Sort tape 1 on county and firm
13. Sort tape 3 on county and firm
14. Write 'by firm and by county' report from tapes 1 and 2
15. Form D card deck by county and region
16. Write summary reports

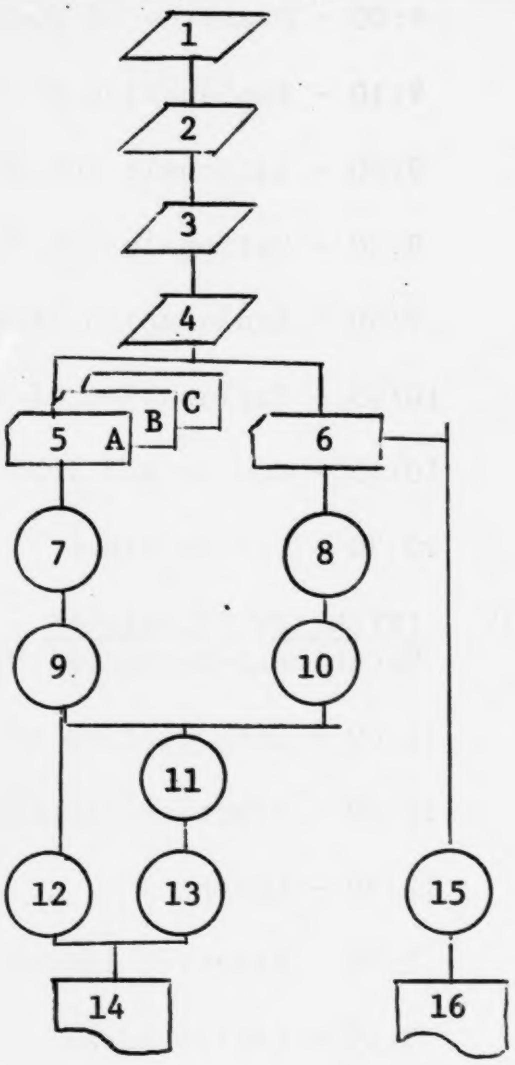


Figure B-5. Data Processing

OCCUPATIONAL TRAINING INFORMATION SYSTEM

DEMAND CODING FORM A

REMARKS: ONE LINE FOR EACH FORM	NAME:	DATE:

NUMBER						NAME OF ORGANIZATION
1					6	7
					A	
					A	
					A	
					A	
					A	
					A	
					A	
					A	
					A	
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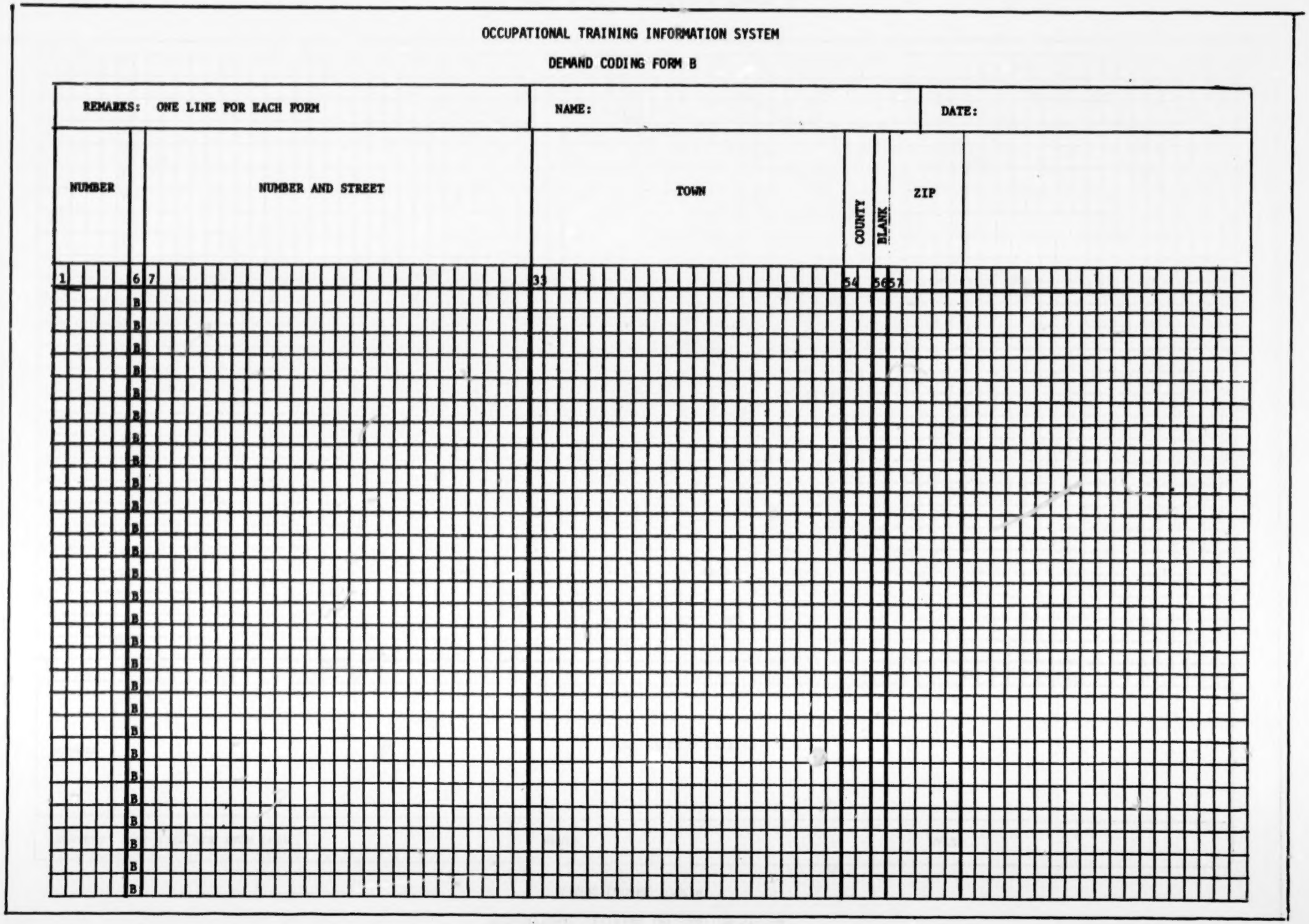
Figure B-6. Coding Form A



OCCUPATIONAL TRAINING INFORMATION SYSTEM

DEMAND CODING FORM B

REMARKS: ONE LINE FOR EACH FORM

NAME:

DATE:

NUMBER		NUMBER AND STREET	TOWN	COUNTY	BLANK	ZIP	
1	6	7	33	54	56	57	
	B						
	B						
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	B						

Figure B-7. Coding Form B

OCCUPATIONAL TRAINING INFORMATION SYSTEM

DEMAND CODING FORM C

REMARKS: ONE LINE FOR EACH FORM	NAME:	DATE:

NUMBER		REPRESENTATIVES NAME	REPRESENTATIVES TITLE	PHONE AND EXTENSION	NUMBER OF EMPLOYEES	MAJOR ACTIVITY	UNION STATUS	18 YEAR OLDS	EXPANSION
1	6	7	31	56	70	75	78	79	80
	C								
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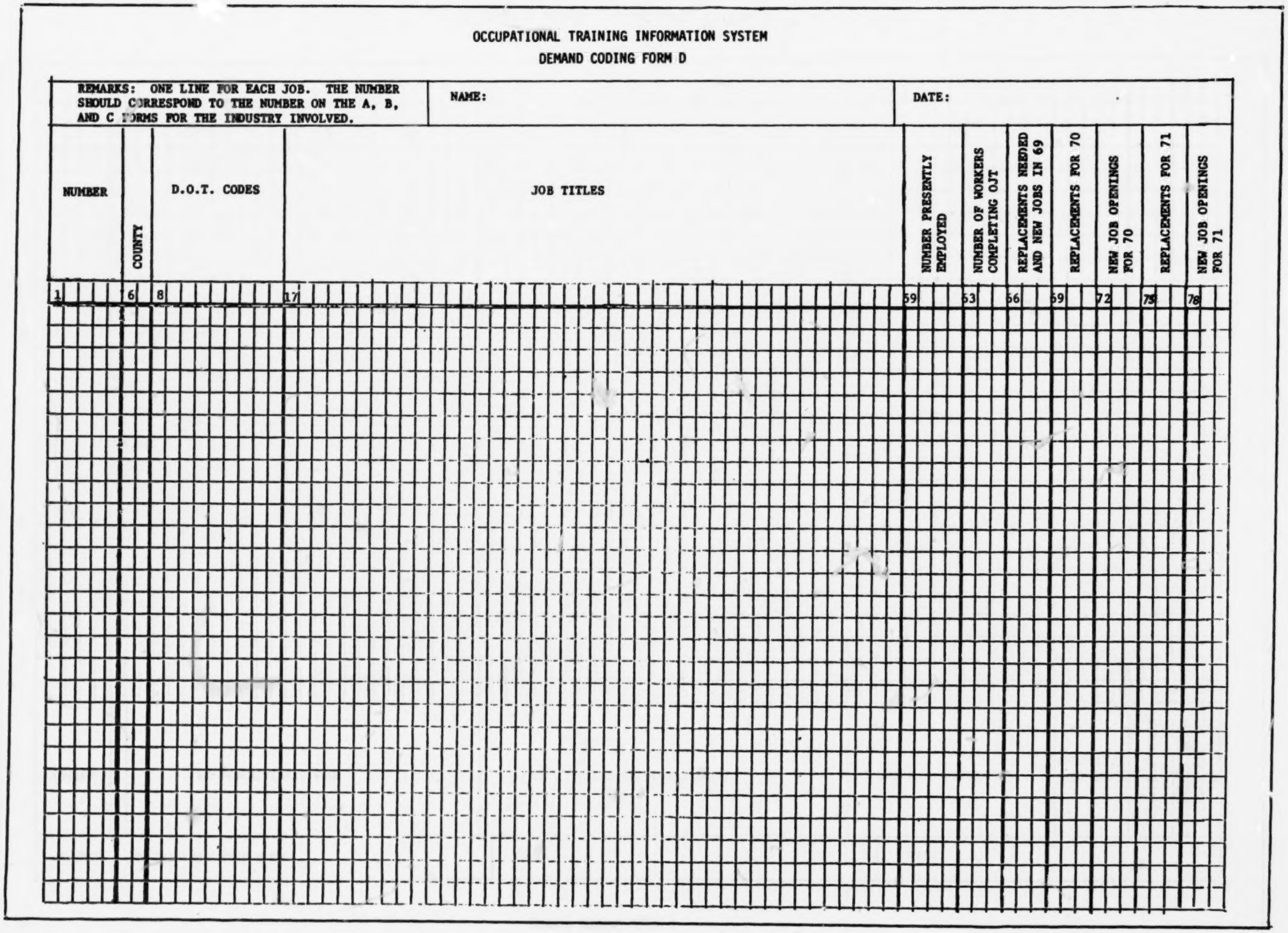
Figure B-8. Coding Form C

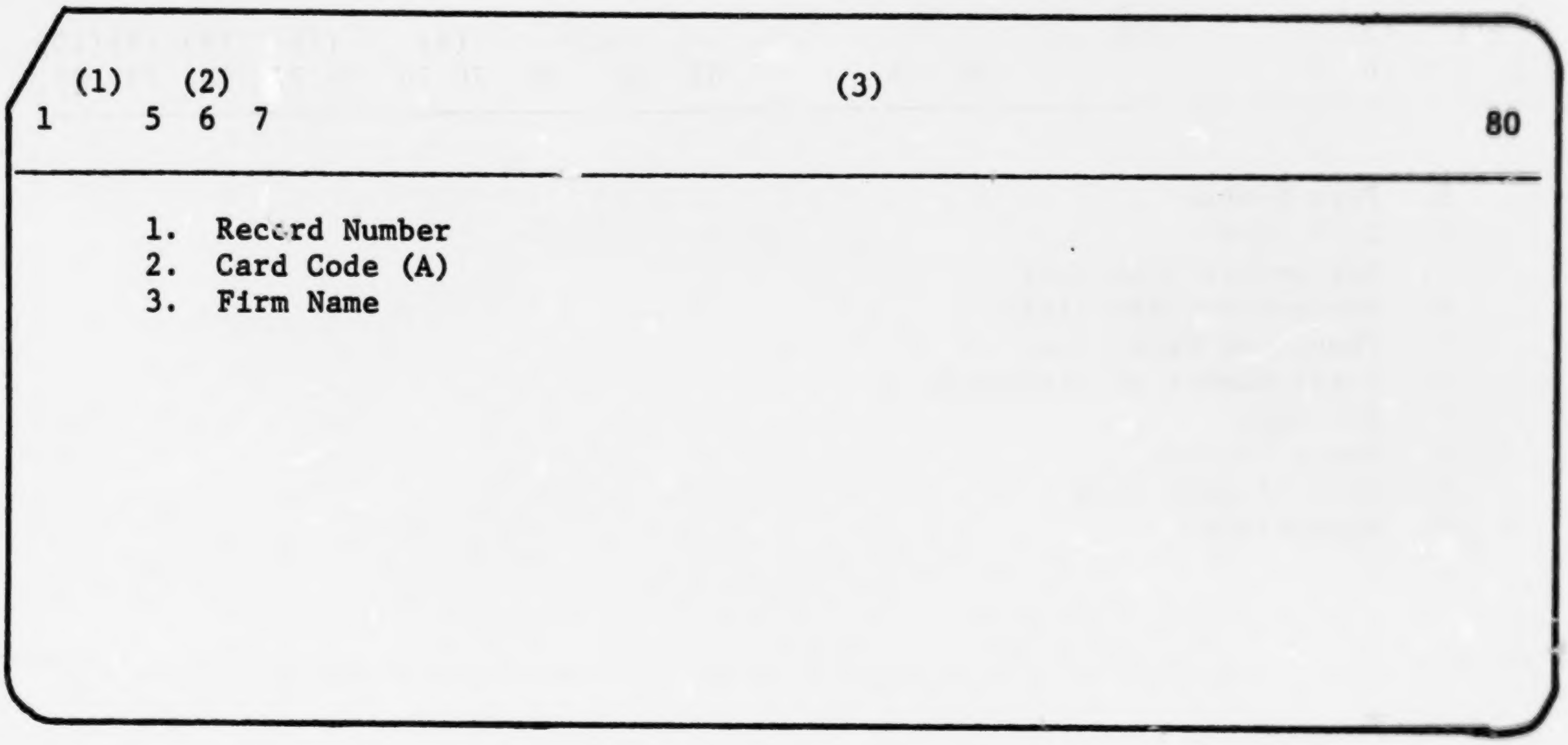


OCCUPATIONAL TRAINING INFORMATION SYSTEM
DEMAND CODING FORM D

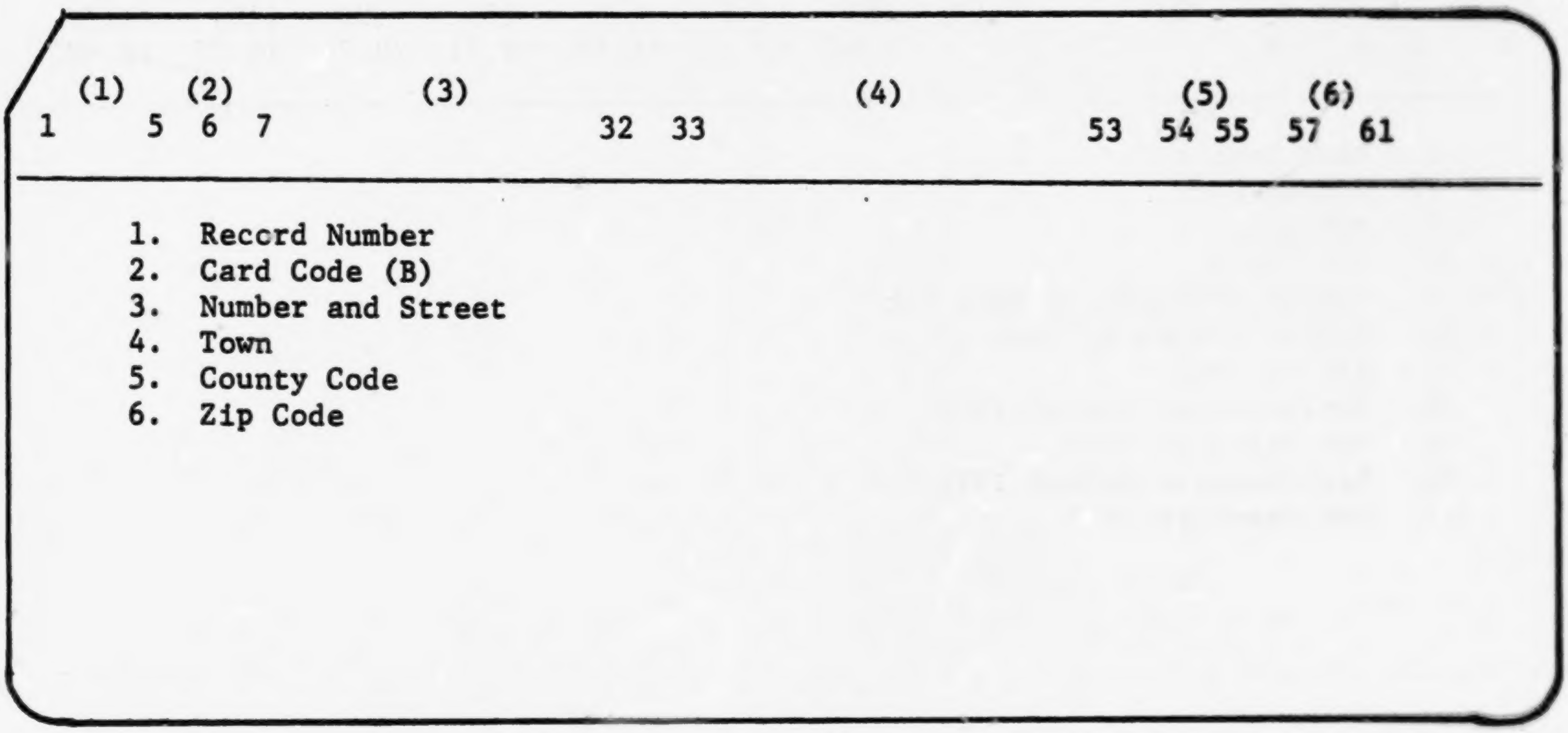
REMARKS: ONE LINE FOR EACH JOB. THE NUMBER SHOULD CORRESPOND TO THE NUMBER ON THE A, B, AND C FORMS FOR THE INDUSTRY INVOLVED.	NAME:	DATE:

NUMBER	COUNTY	D.O.T. CODES	JOB TITLES	NUMBER PRESENTLY EMPLOYED	NUMBER OF WORKERS COMPLETING OJT	REPLACEMENTS NEEDED AND NEW JOBS IN 69	REPLACEMENTS FOR 70	NEW JOB OPENINGS FOR 70	REPLACEMENTS FOR 71	NEW JOB OPENINGS FOR 71
1	6	8	17	59	63	66	69	72	75	78

Figure B-9. Coding Form D



1. Record Number
2. Card Code (A)
3. Firm Name


(1)
(2)
(3)
(4)
(5)
(6)
1
5
6
7
32
33
53
54
55
57
61

1. Record Number
2. Card Code (B)
3. Number and Street
4. Town
5. County Code
6. Zip Code

Figure B-10. A, B, C and D Cards

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1 5	6	7 30	31 55	56 69	70 74	75 77	78	79	80

1. Form Number
2. Card Code
3. Representatives Name
4. Representatives Title
5. Phone and Extention
6. Total Number of Employees
7. SIC Code
8. Union Status
9. Hire 18 year Olds
10. Expansions

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1 5	6 7	8 16	17	59 62	63 65	66 68	69 71	72 74	75 77	78 80

1. Form Number
2. County Code
3. DOT Code
4. Job Title
5. Number employed in this job
6. Number Needed in 1969
7. OJT in 1969
8. Replacements needed 1970
9. New Openings 1970
10. Replacements Needed 1971
11. New Openings 1971

Figure B-10. Continued

Form Number	Name of Organization	Number and Street
1 5	7 79	80 105

Town	County	Zip Code	Representative's Name	Representative Title
106 127	128-129	130 134	135 158	159 183

Phone and Extention	Total Employees	Sic Code	Union Status	Hire 18	Expansion
184 197	198 202	203 205	206	207	208

Figure B-11. Tape 1 Record

Form Number	County	D.O.T. Codes	Job Titles	Number Employed in this Job	Number Needed in 69	OJT in 69	Replacements 70	New Jobs 70	Replacements 71	New Jobs 71
1 5	6 7	8 16	17 58	59 62	63 65	66 68	69 71	72 74	75 77	78 79

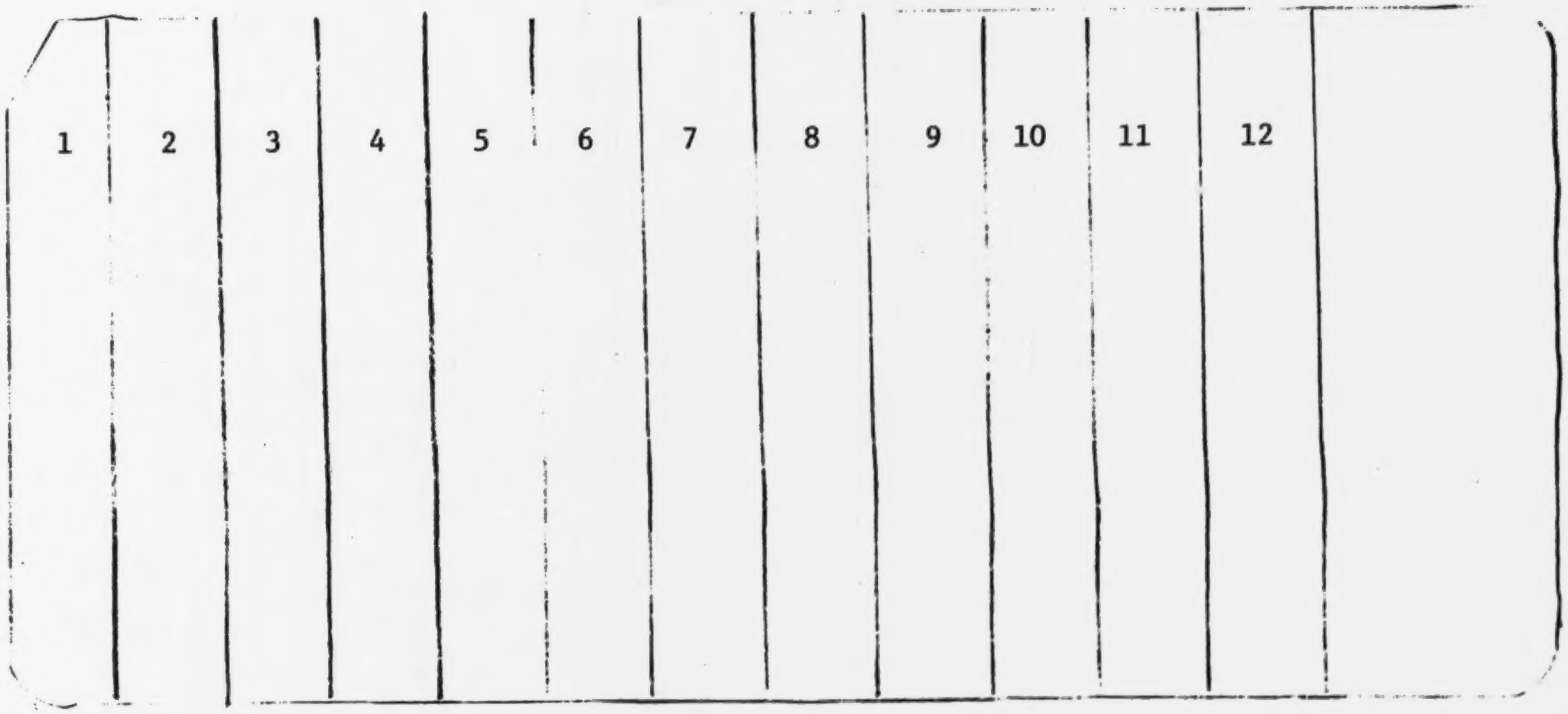
Figure B-12. Tape 2 Record

Name of Organization	Form Number	County
1 74	75 79	80 81

D.O.T. Codes	Job Titles	Number Employed in this Job	Number Needed in 69	OJT in 69
82 91	92 132	133 136	137 139	140 142

Replacements 70	New Jobs 70	Replacements 71	New Jobs 71
143 145	146 148	149 151	152 154

Figure B-13. Tape 3 Record



Fields 1 through 11 - 3 column fields with county numbers (blank when appropriate)

Field 12 - 3 column field with region number

Figure B-14. Sample of Region Control Card

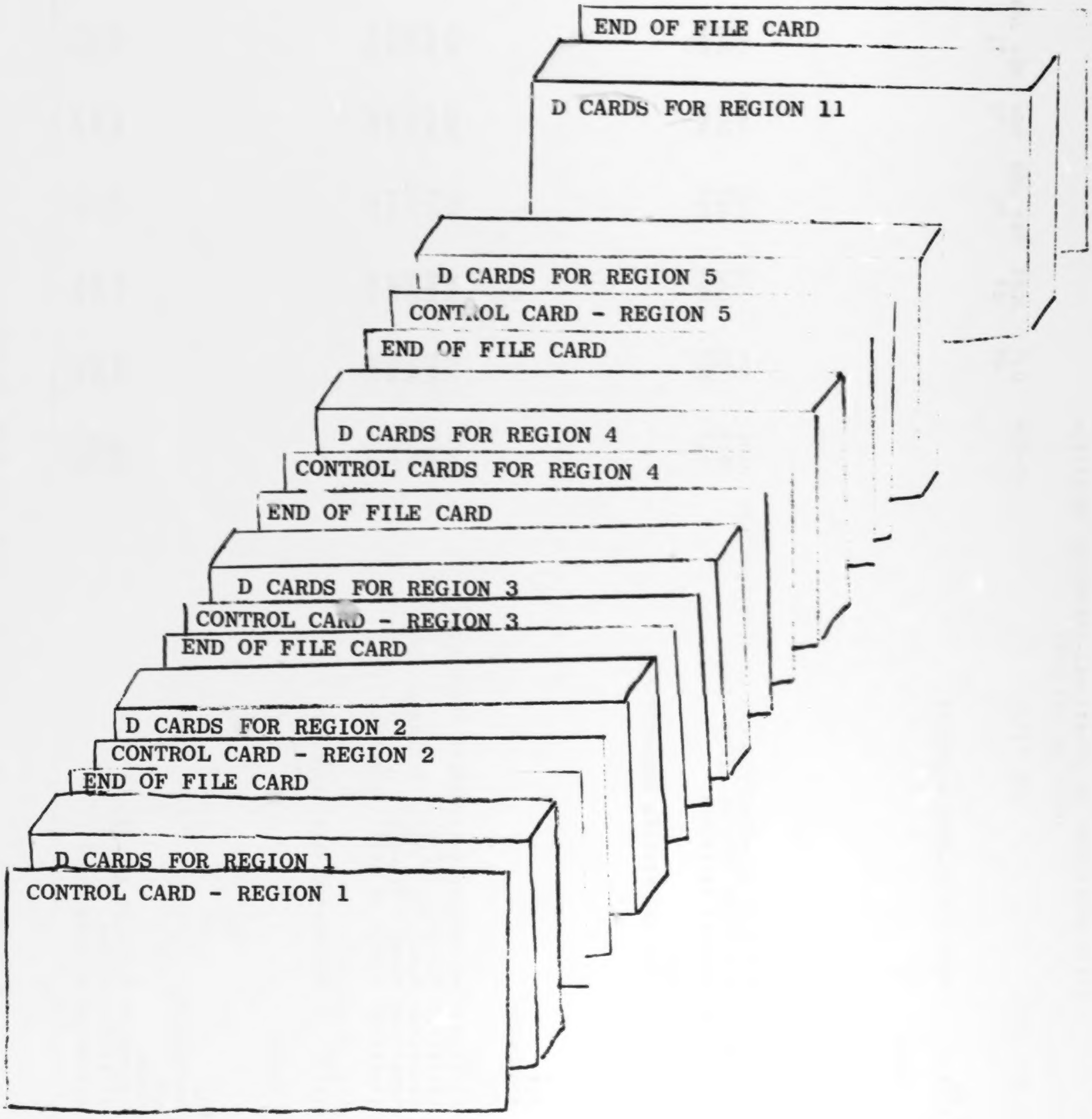
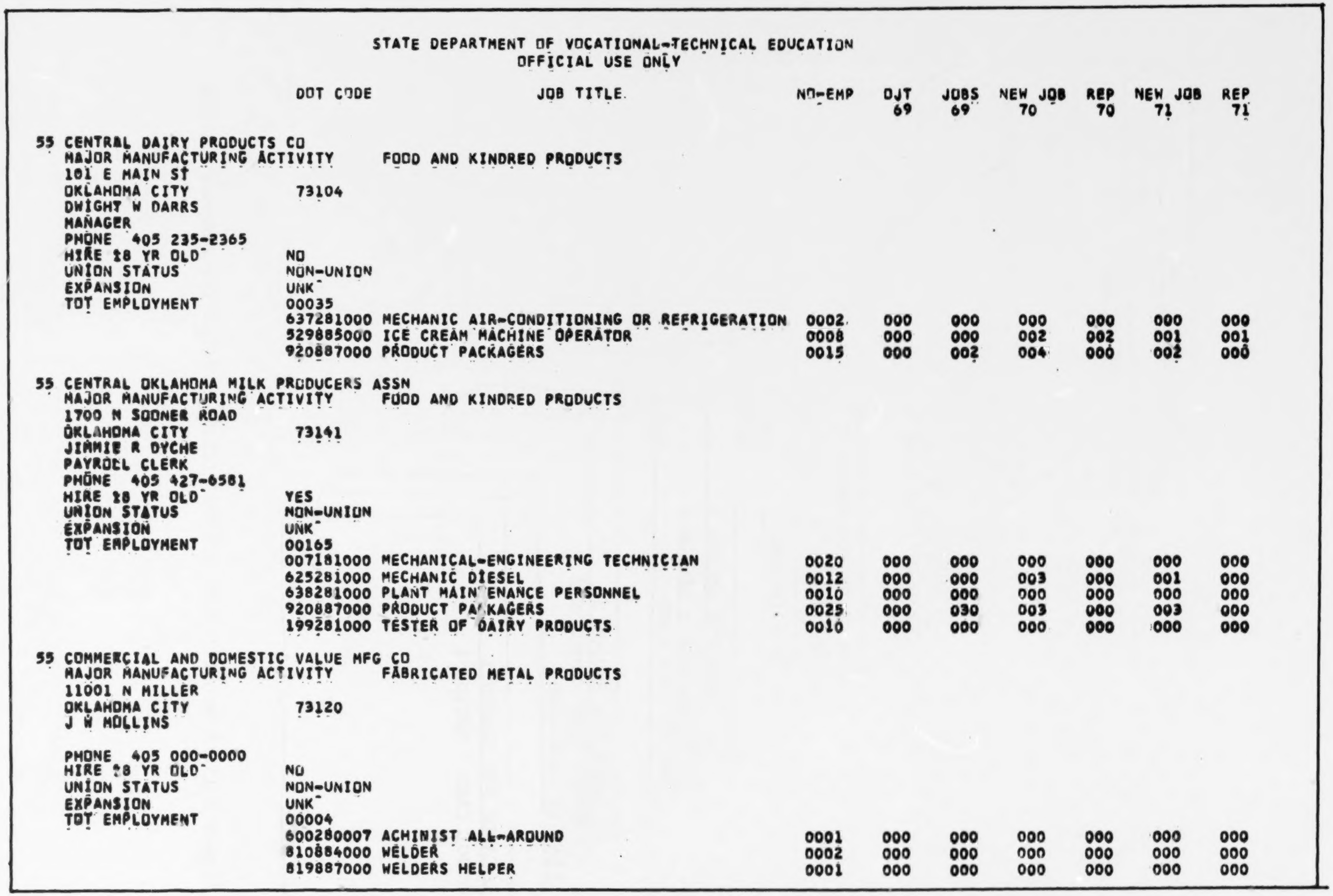

END OF FILE CARD
D CARDS FOR REGION 11
D CARDS FOR REGION 5
CONTROL CARD - REGION 5
END OF FILE CARD
D CARDS FOR REGION 4
CONTROL CARDS FOR REGION 4
END OF FILE CARD
D CARDS FOR REGION 3
CONTROL CARD - REGION 3
END OF FILE CARD
D CARDS FOR REGION 2
CONTROL CARD - REGION 2
END OF FILE CARD
D CARDS FOR REGION 1
CONTROL CARD - REGION 1

Figure B-15. Composition of D card file by region for Summary Reports.



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                               STATE DEPARTMENT OF VOCATIONAL-TECHNICAL EDUCATION
                                               OFFICIAL USE ONLY

                     DOT CODE                   JOB TITLE                NO-EMP   OJT   JOBS  NEW JOB  REP  NEW JOB  REP
                                                                                  69     69     70     70     71     71

55 CENTRAL DAIRY PRODUCTS CO
   MAJOR MANUFACTURING ACTIVITY     FOOD AND KINDRED PRODUCTS
   101 E MAIN ST
   OKLAHOMA CITY           73104
   DWIGHT W DARRS
   MANAGER
   PHONE  405 235-2365
   HIRE 18 YR OLD          NO
   UNION STATUS            NON-UNION
   EXPANSION               UNK
   TOT EMPLOYMENT          00035
                           637281000 MECHANIC AIR-CONDITIONING OR REFRIGERATION  0002   000    000    000    000    000    000
                           529885000 ICE CREAM MACHINE OPERATOR                  0008   000    000    002    002    001    001
                           920887000 PRODUCT PACKAGERS                           0015   000    002    004    000    002    000

55 CENTRAL OKLAHOMA MILK PRODUCERS ASSN
   MAJOR MANUFACTURING ACTIVITY     FOOD AND KINDRED PRODUCTS
   1700 N SOONER ROAD
   OKLAHOMA CITY           73141
   JIMMIE R DYCHE
   PAYROLL CLERK
   PHONE  405 427-6581
   HIRE 18 YR OLD          YES
   UNION STATUS            NON-UNION
   EXPANSION               UNK
   TOT EMPLOYMENT          00165
                           007181000 MECHANICAL-ENGINEERING TECHNICIAN           0020   000    000    000    000    000    000
                           625281000 MECHANIC DIESEL                             0012   000    000    003    000    001    000
                           638281000 PLANT MAIN ENANCE PERSONNEL                 0010   000    000    000    000    000    000
                           920887000 PRODUCT PA KAGERS                           0025   000    030    003    000    003    000
                           199281000 TESTER OF DAIRY PRODUCTS                    0010   000    000    000    000    000    000

55 COMMERCIAL AND DOMESTIC VALUE MFG CO
   MAJOR MANUFACTURING ACTIVITY     FABRICATED METAL PRODUCTS
   11001 N MILLER
   OKLAHOMA CITY           73120
   J W HOLLINS

   PHONE  405 000-0000
   HIRE 18 YR OLD          NO
   UNION STATUS            NON-UNION
   EXPANSION               UNK
   TOT EMPLOYMENT          00004
                           600280007 ACHINIST ALL-AROUND                         0001   000    000    000    000    000    000
                           810884000 WELDER                                      0002   000    000    000    000    000    000
                           819887000 WELDERS HELPER                              0001   000    000    000    000    000    000
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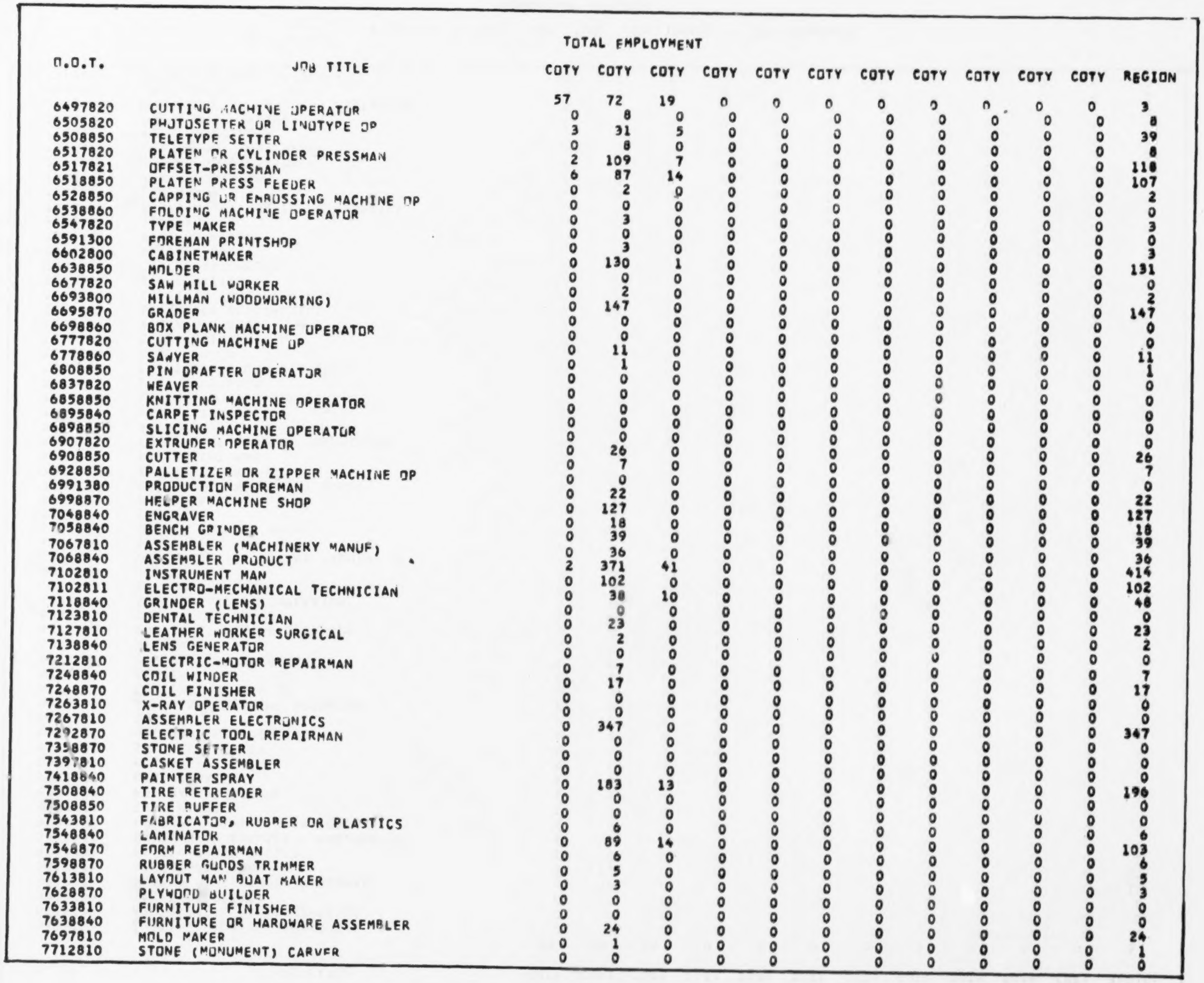
Figure B-16. 'By County, by Firm, by Job' Report
(Sample Page)



```
                                                                   TOTAL EMPLOYMENT
D.O.T.                JOB TITLE                          COTY  COTY  COTY  COTY  COTY  COTY  COTY  COTY  COTY  COTY  COTY  REGION

6497820    CUTTING MACHINE OPERATOR                       57    72    19     0     0     0     0     0     0     0     0     3
6505820    PHOTOSETTER OR LINOTYPE OP                      0     8     0     0     0     0     0     0     0     0     0     8
6508850    TELETYPE SETTER                                 3    31     5     0     0     0     0     0     0     0     0    39
6517820    PLATEN OR CYLINDER PRESSMAN                     0     8     0     0     0     0     0     0     0     0     0     8
6517821    OFFSET-PRESSMAN                                 2   109     7     0     0     0     0     0     0     0     0   118
6518850    PLATEN PRESS FEEDER                             6    87    14     0     0     0     0     0     0     0     0   107
6528850    CAPPING OR EMBOSSING MACHINE OP                 0     2     0     0     0     0     0     0     0     0     0     2
6538860    FOLDING MACHINE OPERATOR                        0     0     0     0     0     0     0     0     0     0     0     0
6547820    TYPE MAKER                                      0     3     0     0     0     0     0     0     0     0     0     3
6591300    FOREMAN PRINTSHOP                               0     0     0     0     0     0     0     0     0     0     0     0
6602800    CABINETMAKER                                    0     3     0     0     0     0     0     0     0     0     0     3
6638850    MOLDER                                          0   130     1     0     0     0     0     0     0     0     0   131
6677820    SAW MILL WORKER                                 0     0     0     0     0     0     0     0     0     0     0     0
6693800    MILLMAN (WOODWORKING)                           0     2     0     0     0     0     0     0     0     0     0     2
6695870    GRADER                                          0   147     0     0     0     0     0     0     0     0     0   147
6698860    BOX PLANK MACHINE OPERATOR                      0     0     0     0     0     0     0     0     0     0     0     0
6777820    CUTTING MACHINE OP                              0     0     0     0     0     0     0     0     0     0     0     0
6778860    SAWYER                                          0    11     0     0     0     0     0     0     0     0     0    11
6808850    PIN DRAFTER OPERATOR                            0     1     0     0     0     0     0     0     0     0     0     1
6837820    WEAVER                                          0     0     0     0     0     0     0     0     0     0     0     0
6858850    KNITTING MACHINE OPERATOR                       0     0     0     0     0     0     0     0     0     0     0     0
6895840    CARPET INSPECTOR                                0     0     0     0     0     0     0     0     0     0     0     0
6898850    SLICING MACHINE OPERATOR                        0     0     0     0     0     0     0     0     0     0     0     0
6907820    EXTRUDER OPERATOR                               0     0     0     0     0     0     0     0     0     0     0     0
6908850    CUTTER                                          0    26     0     0     0     0     0     0     0     0     0    26
6928850    PALLETIZER OR ZIPPER MACHINE OP                 0     7     0     0     0     0     0     0     0     0     0     7
6991380    PRODUCTION FOREMAN                              0     0     0     0     0     0     0     0     0     0     0     0
6998870    HELPER MACHINE SHOP                             0    22     0     0     0     0     0     0     0     0     0    22
7048840    ENGRAVER                                        0   127     0     0     0     0     0     0     0     0     0   127
7058840    BENCH GRINDER                                   0    18     0     0     0     0     0     0     0     0     0    18
7067810    ASSEMBLER (MACHINERY MANUF)                     0    39     0     0     0     0     0     0     0     0     0    39
7068840    ASSEMBLER PRODUCT                               0    36     0     0     0     0     0     0     0     0     0    36
7102810    INSTRUMENT MAN                                  2   371    41     0     0     0     0     0     0     0     0   414
7102811    ELECTRO-MECHANICAL TECHNICIAN                   0   102     0     0     0     0     0     0     0     0     0   102
7118840    GRINDER (LENS)                                  0    38    10     0     0     0     0     0     0     0     0    48
7123810    DENTAL TECHNICIAN                               0     0     0     0     0     0     0     0     0     0     0     0
7127810    LEATHER WORKER SURGICAL                         0    23     0     0     0     0     0     0     0     0     0    23
7138840    LENS GENERATOR                                  0     2     0     0     0     0     0     0     0     0     0     2
7212810    ELECTRIC-MOTOR REPAIRMAN                        0     0     0     0     0     0     0     0     0     0     0     0
7248840    COIL WINDER                                     0     7     0     0     0     0     0     0     0     0     0     7
7248870    COIL FINISHER                                   0    17     0     0     0     0     0     0     0     0     0    17
7263810    X-RAY OPERATOR                                  0     0     0     0     0     0     0     0     0     0     0     0
7267810    ASSEMBLER ELECTRONICS                           0     0     0     0     0     0     0     0     0     0     0     0
7292870    ELECTRIC TOOL REPAIRMAN                         0   347     0     0     0     0     0     0     0     0     0   347
7358870    STONE SETTER                                    0     0     0     0     0     0     0     0     0     0     0     0
7397810    CASKET ASSEMBLER                                0     0     0     0     0     0     0     0     0     0     0     0
7418840    PAINTER SPRAY                                   0     0     0     0     0     0     0     0     0     0     0     0
7508840    TIRE RETREADER                                  0   183    13     0     0     0     0     0     0     0     0   196
7508850    TIRE BUFFER                                     0     0     0     0     0     0     0     0     0     0     0     0
7543810    FABRICATOR, RUBBER OR PLASTICS                  0     0     0     0     0     0     0     0     0     0     0     0
7548840    LAMINATOR                                       0     6     0     0     0     0     0     0     0     0     0     6
7548870    FORM REPAIRMAN                                  0    89    14     0     0     0     0     0     0     0     0   103
7598870    RUBBER GOODS TRIMMER                            0     6     0     0     0     0     0     0     0     0     0     6
7613810    LAYOUT MAN BOAT MAKER                           0     5     0     0     0     0     0     0     0     0     0     5
7628870    PLYWOOD BUILDER                                 0     3     0     0     0     0     0     0     0     0     0     3
7633810    FURNITURE FINISHER                              0     0     0     0     0     0     0     0     0     0     0     0
7638840    FURNITURE OR HARDWARE ASSEMBLER                 0     0     0     0     0     0     0     0     0     0     0     0
7697810    MOLD MAKER                                      0    24     0     0     0     0     0     0     0     0     0    24
7712810    STONE (MONUMENT) CARVER                         0     1     0     0     0     0     0     0     0     0     0     1
                                                           0     0     0     0     0     0     0     0     0     0     0     0
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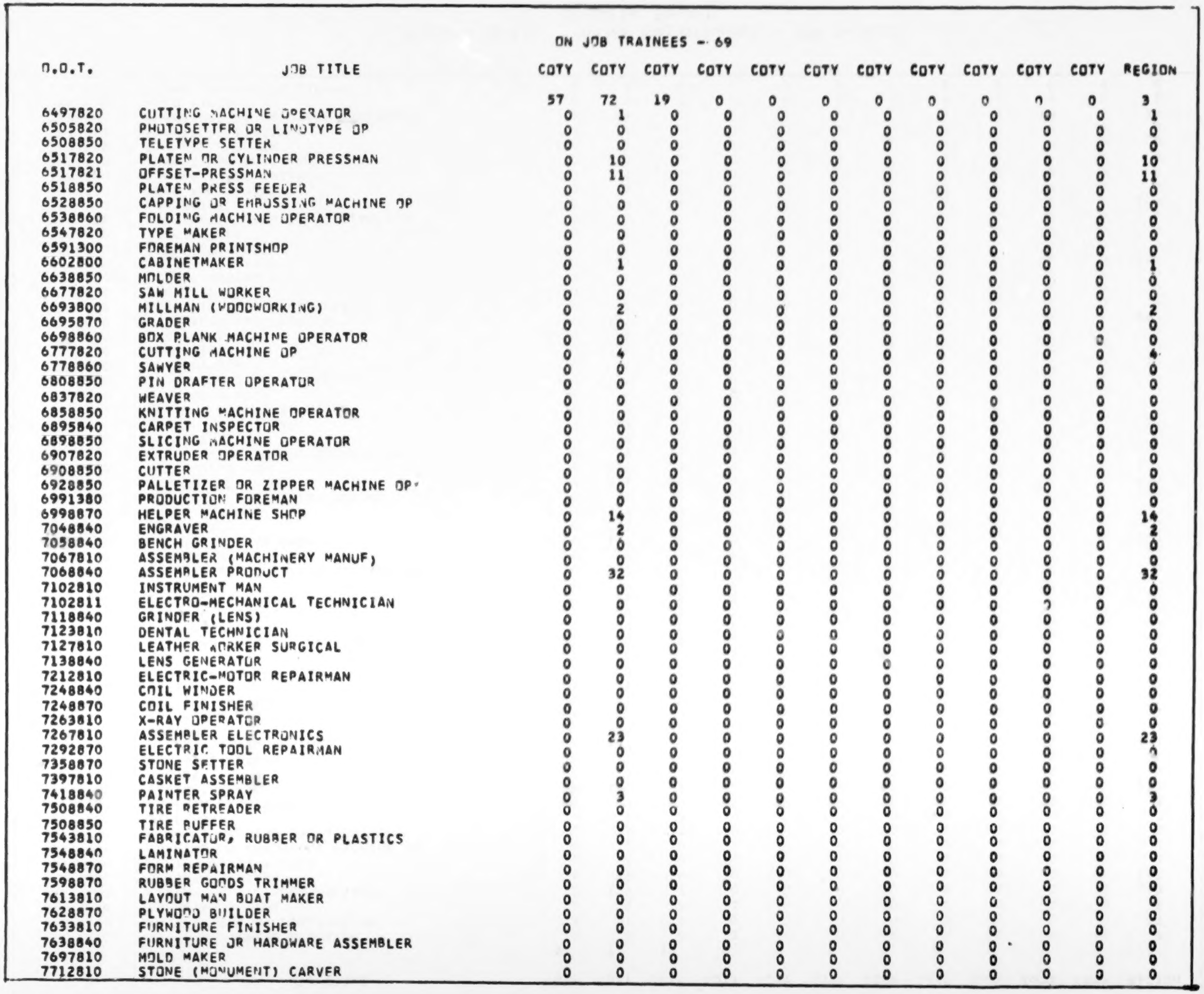
Figure B-17. Total Employment - 69 Report
(Sample Page)



```
                                                                ON JOB TRAINEES - 69
D.O.T.    JOB TITLE                          COTY  COTY  COTY  COTY  COTY  COTY  COTY  COTY  COTY  COTY  COTY  REGION

                                               57    72    19     0     0     0     0     0     0     0     0       3
6497820   CUTTING MACHINE OPERATOR              0     1     0     0     0     0     0     0     0     0     0       1
6505820   PHOTOSETTER OR LINOTYPE OP            0     0     0     0     0     0     0     0     0     0     0       0
6508850   TELETYPE SETTER                       0     0     0     0     0     0     0     0     0     0     0       0
6517820   PLATEN OR CYLINDER PRESSMAN           0    10     0     0     0     0     0     0     0     0     0      10
6517821   OFFSET-PRESSMAN                       0    11     0     0     0     0     0     0     0     0     0      11
6518850   PLATEN PRESS FEEDER                   0     0     0     0     0     0     0     0     0     0     0       0
6528850   CAPPING OR EMBOSSING MACHINE OP       0     0     0     0     0     0     0     0     0     0     0       0
6538860   FOLDING MACHINE OPERATOR              0     0     0     0     0     0     0     0     0     0     0       0
6547820   TYPE MAKER                            0     0     0     0     0     0     0     0     0     0     0       0
6591300   FOREMAN PRINTSHOP                     0     0     0     0     0     0     0     0     0     0     0       0
6602800   CABINETMAKER                          0     1     0     0     0     0     0     0     0     0     0       1
6638850   MOLDER                                0     0     0     0     0     0     0     0     0     0     0       0
6677820   SAW MILL WORKER                       0     0     0     0     0     0     0     0     0     0     0       0
6693800   MILLMAN (WOODWORKING)                 0     2     0     0     0     0     0     0     0     0     0       2
6695870   GRADER                                0     0     0     0     0     0     0     0     0     0     0       0
6698860   BOX PLANK MACHINE OPERATOR            0     0     0     0     0     0     0     0     0     0     0       0
6777820   CUTTING MACHINE OP                    0     4     0     0     0     0     0     0     0     0     0       4
6778860   SAWYER                                0     0     0     0     0     0     0     0     0     0     0       0
6808850   PIN DRAFTER OPERATOR                  0     0     0     0     0     0     0     0     0     0     0       0
6837820   WEAVER                                0     0     0     0     0     0     0     0     0     0     0       0
6858850   KNITTING MACHINE OPERATOR             0     0     0     0     0     0     0     0     0     0     0       0
6895840   CARPET INSPECTOR                      0     0     0     0     0     0     0     0     0     0     0       0
6898850   SLICING MACHINE OPERATOR              0     0     0     0     0     0     0     0     0     0     0       0
6907820   EXTRUDER OPERATOR                     0     0     0     0     0     0     0     0     0     0     0       0
6908850   CUTTER                                0     0     0     0     0     0     0     0     0     0     0       0
6928850   PALLETIZER OR ZIPPER MACHINE OP       0     0     0     0     0     0     0     0     0     0     0       0
6991380   PRODUCTION FOREMAN                    0     0     0     0     0     0     0     0     0     0     0       0
6998870   HELPER MACHINE SHOP                   0    14     0     0     0     0     0     0     0     0     0      14
7048840   ENGRAVER                              0     2     0     0     0     0     0     0     0     0     0       2
7058840   BENCH GRINDER                         0     0     0     0     0     0     0     0     0     0     0       0
7067810   ASSEMBLER (MACHINERY MANUF)           0     0     0     0     0     0     0     0     0     0     0       0
7068840   ASSEMBLER PRODUCT                     0    32     0     0     0     0     0     0     0     0     0      32
7102810   INSTRUMENT MAN                        0     0     0     0     0     0     0     0     0     0     0       0
7102811   ELECTRO-MECHANICAL TECHNICIAN         0     0     0     0     0     0     0     0     0     0     0       0
7118840   GRINDER (LENS)                        0     0     0     0     0     0     0     0     0     0     0       0
7123810   DENTAL TECHNICIAN                     0     0     0     0     0     0     0     0     0     0     0       0
7127810   LEATHER WORKER SURGICAL               0     0     0     0     0     0     0     0     0     0     0       0
7138840   LENS GENERATOR                        0     0     0     0     0     0     0     0     0     0     0       0
7212810   ELECTRIC-MOTOR REPAIRMAN              0     0     0     0     0     0     0     0     0     0     0       0
7248840   COIL WINDER                           0     0     0     0     0     0     0     0     0     0     0       0
7248870   COIL FINISHER                         0     0     0     0     0     0     0     0     0     0     0       0
7263810   X-RAY OPERATOR                        0     0     0     0     0     0     0     0     0     0     0       0
7267810   ASSEMBLER ELECTRONICS                 0    23     0     0     0     0     0     0     0     0     0      23
7292870   ELECTRIC TOOL REPAIRMAN               0     0     0     0     0     0     0     0     0     0     0       0
7358870   STONE SETTER                          0     0     0     0     0     0     0     0     0     0     0       0
7397810   CASKET ASSEMBLER                      0     0     0     0     0     0     0     0     0     0     0       0
7418840   PAINTER SPRAY                         0     3     0     0     0     0     0     0     0     0     0       3
7508840   TIRE RETREADER                        0     0     0     0     0     0     0     0     0     0     0       0
7508850   TIRE BUFFER                           0     0     0     0     0     0     0     0     0     0     0       0
7543810   FABRICATOR, RUBBER OR PLASTICS        0     0     0     0     0     0     0     0     0     0     0       0
7548840   LAMINATOR                             0     0     0     0     0     0     0     0     0     0     0       0
7548870   FORM REPAIRMAN                        0     0     0     0     0     0     0     0     0     0     0       0
7598870   RUBBER GOODS TRIMMER                  0     0     0     0     0     0     0     0     0     0     0       0
7613810   LAYOUT MAN BOAT MAKER                 0     0     0     0     0     0     0     0     0     0     0       0
7628870   PLYWOOD BUILDER                       0     0     0     0     0     0     0     0     0     0     0       0
7633810   FURNITURE FINISHER                    0     0     0     0     0     0     0     0     0     0     0       0
7638840   FURNITURE OR HARDWARE ASSEMBLER       0     0     0     0     0     0     0     0     0     0     0       0
7697810   MOLD MAKER                            0     0     0     0     0     0     0     0     0     0     0       0
7712810   STONE (MONUMENT) CARVER               0     0     0     0     0     0     0     0     0     0     0       0
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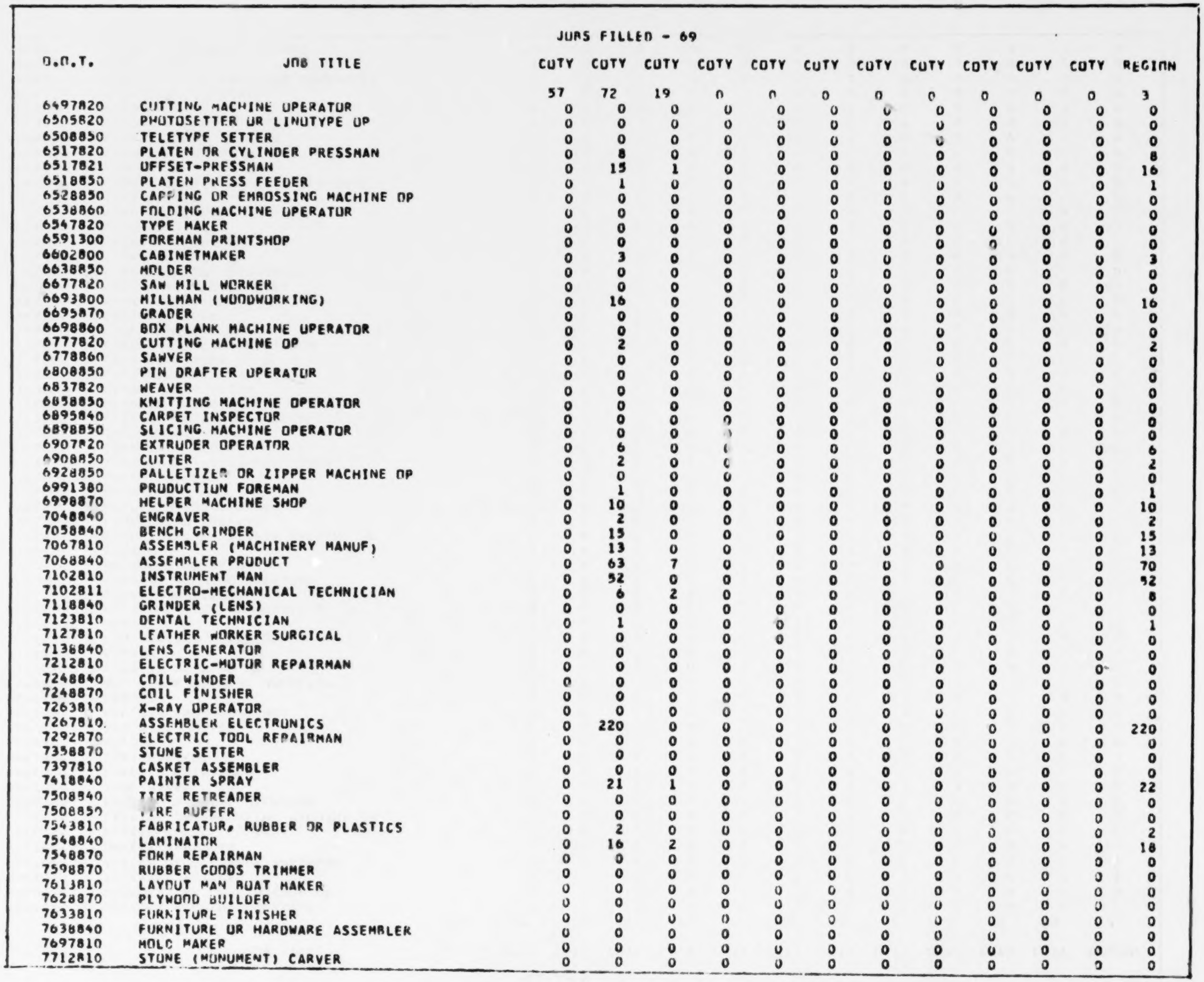
Figure B-18. On Job Trainees - 69 Report
(Sample Page)



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                                                          JURS FILLED - 69
D.O.T.                      JOB TITLE                 CUTY  CUTY  CUTY  COTY  COTY  CUTY  CUTY  CUTY  COTY  CUTY  COTY  REGION

                                                       57    72    19    0     0     0     0     0     0     0     0     3
6497820    CUTTING MACHINE UPERATUR                     0     0     0    0     0     0     0     0     0     0     0     0
6505820    PHOTOSETTER UR LINUTYPE UP                   0     0     0    0     0     0     0     0     0     0     0     0
6508850    TELETYPE SETTER                              0     0     0    0     0     0     0     0     0     0     0     0
6517820    PLATEN OR CYLINDER PRESSMAN                  0     8     0    0     0     0     0     0     0     0     0     8
6517821    UFFSET-PRESSMAN                              0    15     1    0     0     0     0     0     0     0     0    16
6518850    PLATEN PRESS FEEDER                          0     1     0    0     0     0     0     0     0     0     0     1
6528850    CAPPING OR EMBOSSING MACHINE OP              0     0     0    0     0     0     0     0     0     0     0     0
6538860    FOLDING MACHINE UPERATUR                     0     0     0    0     0     0     0     0     0     0     0     0
6547820    TYPE MAKER                                   0     0     0    0     0     0     0     0     0     0     0     0
6591300    FOREMAN PRINTSHOP                            0     0     0    0     0     0     0     0     0     0     0     0
6602800    CABINETMAKER                                 0     3     0    0     0     0     0     0     0     0     0     3
6638850    MOLDER                                       0     0     0    0     0     0     0     0     0     0     0     0
6677820    SAW MILL WORKER                              0     0     0    0     0     0     0     0     0     0     0     0
6693800    MILLMAN (WOODWORKING)                        0    16     0    0     0     0     0     0     0     0     0    16
6695870    GRADER                                       0     0     0    0     0     0     0     0     0     0     0     0
6698860    BOX PLANK MACHINE UPERATOR                   0     0     0    0     0     0     0     0     0     0     0     0
6777820    CUTTING MACHINE OP                           0     2     0    0     0     0     0     0     0     0     0     2
6778860    SAWYER                                       0     0     0    0     0     0     0     0     0     0     0     0
6808850    PIN DRAFTER UPERATUR                         0     0     0    0     0     0     0     0     0     0     0     0
6837820    WEAVER                                       0     0     0    0     0     0     0     0     0     0     0     0
6858850    KNITTING MACHINE OPERATOR                    0     0     0    0     0     0     0     0     0     0     0     0
6895840    CARPET INSPECTOR                             0     0     0    0     0     0     0     0     0     0     0     0
6898850    SLICING MACHINE OPERATOR                     0     0     0    0     0     0     0     0     0     0     0     0
6907820    EXTRUDER OPERATOR                            0     6     0    0     0     0     0     0     0     0     0     6
6908850    CUTTER                                       0     2     0    0     0     0     0     0     0     0     0     2
6928850    PALLETIZER OR ZIPPER MACHINE OP              0     0     0    0     0     0     0     0     0     0     0     0
6991380    PRUDUCTIUN FOREMAN                           0     1     0    0     0     0     0     0     0     0     0     1
6998870    HELPER MACHINE SHOP                          0    10     0    0     0     0     0     0     0     0     0    10
7048840    ENGRAVER                                     0     2     0    0     0     0     0     0     0     0     0     2
7058840    BENCH GRINDER                                0    15     0    0     0     0     0     0     0     0     0    15
7067810    ASSEMBLER (MACHINERY MANUF)                  0    13     0    0     0     0     0     0     0     0     0    13
7068840    ASSEMBLER PRODUCT                            0    63     7    0     0     0     0     0     0     0     0    70
7102810    INSTRUMENT MAN                               0    52     0    0     0     0     0     0     0     0     0    52
7102811    ELECTRO-MECHANICAL TECHNICIAN                0     6     2    0     0     0     0     0     0     0     0     8
7118840    GRINDER (LENS)                               0     0     0    0     0     0     0     0     0     0     0     0
7123810    DENTAL TECHNICIAN                            0     1     0    0     0     0     0     0     0     0     0     1
7127810    LEATHER WORKER SURGICAL                      0     0     0    0     0     0     0     0     0     0     0     0
7136840    LENS GENERATOR                               0     0     0    0     0     0     0     0     0     0     0     0
7212810    ELECTRIC-MOTOR REPAIRMAN                     0     0     0    0     0     0     0     0     0     0     0     0
7248840    COIL WINDER                                  0     0     0    0     0     0     0     0     0     0     0     0
7248870    COIL FINISHER                                0     0     0    0     0     0     0     0     0     0     0     0
7263810    X-RAY OPERATOR                               0     0     0    0     0     0     0     0     0     0     0     0
7267810    ASSEMBLER ELECTRUNICS                        0   220     0    0     0     0     0     0     0     0     0   220
7292870    ELECTRIC TOOL REPAIRMAN                      0     0     0    0     0     0     0     0     0     0     0     0
7358870    STUNE SETTER                                 0     0     0    0     0     0     0     0     0     0     0     0
7397810    CASKET ASSEMBLER                             0     0     0    0     0     0     0     0     0     0     0     0
7418840    PAINTER SPRAY                                0    21     1    0     0     0     0     0     0     0     0    22
7508840    TIRE RETREADER                               0     0     0    0     0     0     0     0     0     0     0     0
7508850    TIRE BUFFER                                  0     0     0    0     0     0     0     0     0     0     0     0
7543810    FABRICATUR, RUBBER OR PLASTICS               0     2     0    0     0     0     0     0     0     0     0     2
7548840    LAMINATOR                                    0    16     2    0     0     0     0     0     0     0     0    18
7548870    FORM REPAIRMAN                               0     0     0    0     0     0     0     0     0     0     0     0
7598870    RUBBER GOODS TRIMMER                         0     0     0    0     0     0     0     0     0     0     0     0
7613810    LAYOUT MAN BOAT MAKER                        0     0     0    0     0     0     0     0     0     0     0     0
7628870    PLYWOOD BUILDER                              0     0     0    0     0     0     0     0     0     0     0     0
7633810    FURNITURE FINISHER                           0     0     0    0     0     0     0     0     0     0     0     0
7638840    FURNITURE OR HARDWARE ASSEMBLER              0     0     0    0     0     0     0     0     0     0     0     0
7697810    MOLD MAKER                                   0     0     0    0     0     0     0     0     0     0     0     0
7712810    STONE (MONUMENT) CARVER                      0     0     0    0     0     0     0     0     0     0     0     0
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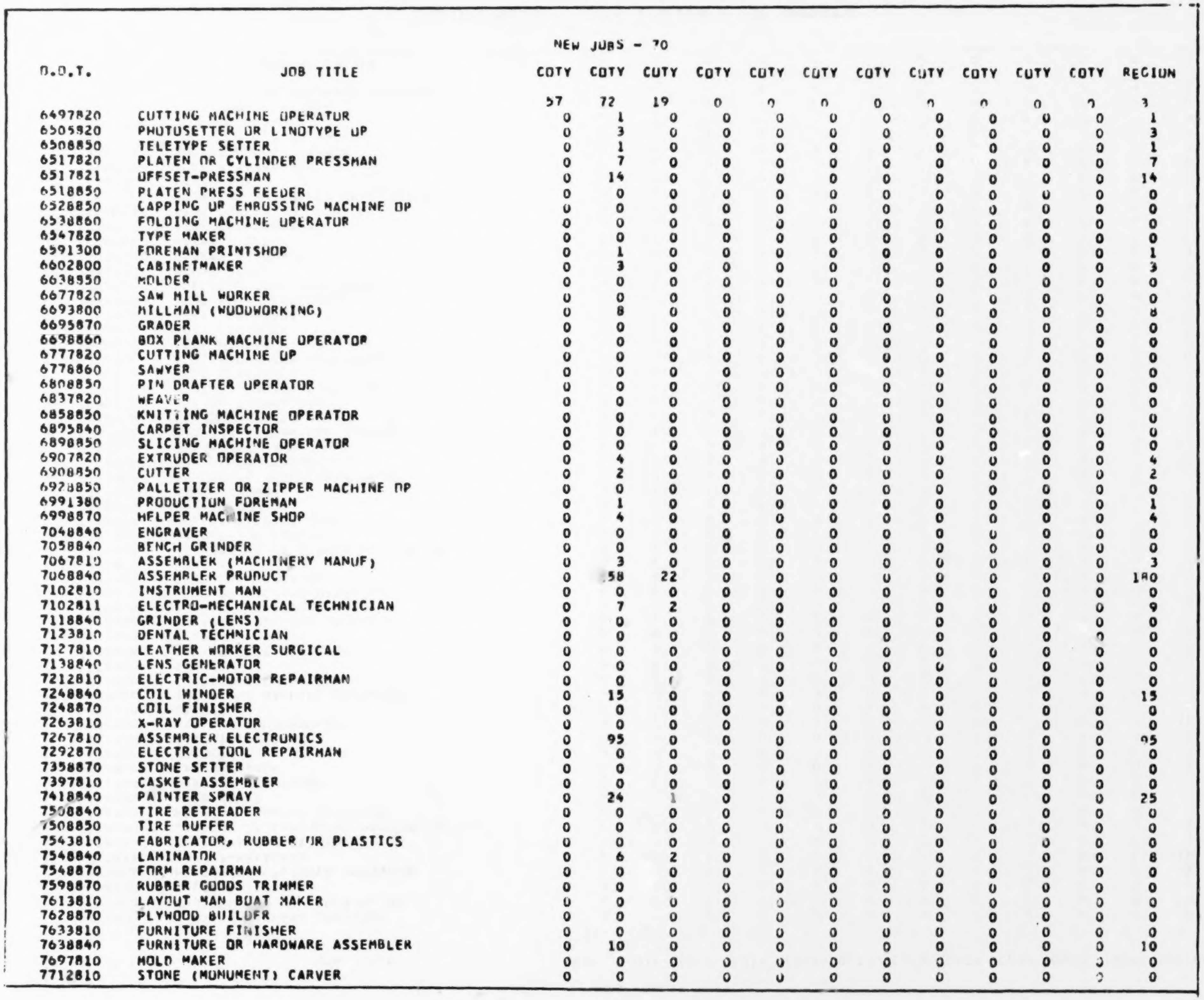
Figure B-19. Jobs Filled - 69 Report
(Sample Page)



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                                                  NEW JOBS - 70
D.O.T.                  JOB TITLE                 COTY COTY COTY COTY COTY COTY COTY COTY COTY COTY COTY REGION

                                                   57   72   19    0    0    0    0    0    0    0    0    3
6497820   CUTTING MACHINE OPERATOR                  0    1    0    0    0    0    0    0    0    0    0    1
6505920   PHOTOSETTER OR LINOTYPE OP                0    3    0    0    0    0    0    0    0    0    0    3
6508850   TELETYPE SETTER                           0    1    0    0    0    0    0    0    0    0    0    1
6517820   PLATEN OR CYLINDER PRESSMAN               0    7    0    0    0    0    0    0    0    0    0    7
6517821   OFFSET-PRESSMAN                           0   14    0    0    0    0    0    0    0    0    0   14
6518850   PLATEN PRESS FEEDER                       0    0    0    0    0    0    0    0    0    0    0    0
6528850   CAPPING OR EMBOSSING MACHINE OP           0    0    0    0    0    0    0    0    0    0    0    0
6538860   FOLDING MACHINE OPERATOR                  0    0    0    0    0    0    0    0    0    0    0    0
6547820   TYPE MAKER                                0    0    0    0    0    0    0    0    0    0    0    0
6591300   FOREMAN PRINTSHOP                         0    1    0    0    0    0    0    0    0    0    0    1
6602800   CABINETMAKER                              0    3    0    0    0    0    0    0    0    0    0    3
6638950   MOLDER                                    0    0    0    0    0    0    0    0    0    0    0    0
6677820   SAW MILL WORKER                           0    0    0    0    0    0    0    0    0    0    0    0
6693800   MILLMAN (WOODWORKING)                     0    8    0    0    0    0    0    0    0    0    0    8
6695870   GRADER                                    0    0    0    0    0    0    0    0    0    0    0    0
6698860   BOX PLANK MACHINE OPERATOR                0    0    0    0    0    0    0    0    0    0    0    0
6777820   CUTTING MACHINE OP                        0    0    0    0    0    0    0    0    0    0    0    0
6778860   SAWYER                                    0    0    0    0    0    0    0    0    0    0    0    0
6808850   PIN DRAFTER OPERATOR                      0    0    0    0    0    0    0    0    0    0    0    0
6837820   WEAVER                                    0    0    0    0    0    0    0    0    0    0    0    0
6858850   KNITTING MACHINE OPERATOR                 0    0    0    0    0    0    0    0    0    0    0    0
6895840   CARPET INSPECTOR                          0    0    0    0    0    0    0    0    0    0    0    0
6898850   SLICING MACHINE OPERATOR                  0    0    0    0    0    0    0    0    0    0    0    0
6907820   EXTRUDER OPERATOR                         0    4    0    0    0    0    0    0    0    0    0    4
6908850   CUTTER                                    0    2    0    0    0    0    0    0    0    0    0    2
6928850   PALLETIZER OR ZIPPER MACHINE OP           0    0    0    0    0    0    0    0    0    0    0    0
6991380   PRODUCTION FOREMAN                        0    1    0    0    0    0    0    0    0    0    0    1
6998870   HELPER MACHINE SHOP                       0    4    0    0    0    0    0    0    0    0    0    4
7048840   ENGRAVER                                  0    0    0    0    0    0    0    0    0    0    0    0
7058840   BENCH GRINDER                             0    0    0    0    0    0    0    0    0    0    0    0
7067810   ASSEMBLER (MACHINERY MANUF)               0    3    0    0    0    0    0    0    0    0    0    3
7068840   ASSEMBLER PRODUCT                         0  158   22    0    0    0    0    0    0    0    0  180
7102810   INSTRUMENT MAN                            0    0    0    0    0    0    0    0    0    0    0    0
7102811   ELECTRO-MECHANICAL TECHNICIAN             0    7    2    0    0    0    0    0    0    0    0    9
7118840   GRINDER (LENS)                            0    0    0    0    0    0    0    0    0    0    0    0
7123810   DENTAL TECHNICIAN                         0    0    0    0    0    0    0    0    0    0    0    0
7127810   LEATHER WORKER SURGICAL                   0    0    0    0    0    0    0    0    0    0    0    0
7138840   LENS GENERATOR                            0    0    0    0    0    0    0    0    0    0    0    0
7212810   ELECTRIC-MOTOR REPAIRMAN                  0    0    0    0    0    0    0    0    0    0    0    0
7248840   COIL WINDER                               0   15    0    0    0    0    0    0    0    0    0   15
7248870   COIL FINISHER                             0    0    0    0    0    0    0    0    0    0    0    0
7263810   X-RAY OPERATOR                            0    0    0    0    0    0    0    0    0    0    0    0
7267810   ASSEMBLER ELECTRONICS                     0   95    0    0    0    0    0    0    0    0    0   95
7292870   ELECTRIC TOOL REPAIRMAN                   0    0    0    0    0    0    0    0    0    0    0    0
7358870   STONE SETTER                              0    0    0    0    0    0    0    0    0    0    0    0
7397810   CASKET ASSEMBLER                          0    0    0    0    0    0    0    0    0    0    0    0
7418840   PAINTER SPRAY                             0   24    1    0    0    0    0    0    0    0    0   25
7508840   TIRE RETREADER                            0    0    0    0    0    0    0    0    0    0    0    0
7508850   TIRE BUFFER                               0    0    0    0    0    0    0    0    0    0    0    0
7543810   FABRICATOR, RUBBER OR PLASTICS            0    0    0    0    0    0    0    0    0    0    0    0
7548840   LAMINATOR                                 0    6    2    0    0    0    0    0    0    0    0    8
7548870   FORM REPAIRMAN                            0    0    0    0    0    0    0    0    0    0    0    0
7598870   RUBBER GOODS TRIMMER                      0    0    0    0    0    0    0    0    0    0    0    0
7613810   LAYOUT MAN BOAT MAKER                     0    0    0    0    0    0    0    0    0    0    0    0
7628870   PLYWOOD BUILDER                           0    0    0    0    0    0    0    0    0    0    0    0
7633810   FURNITURE FINISHER                        0    0    0    0    0    0    0    0    0    0    0    0
7638840   FURNITURE OR HARDWARE ASSEMBLER           0   10    0    0    0    0    0    0    0    0    0   10
7697810   MOLD MAKER                                0    0    0    0    0    0    0    0    0    0    0    0
7712810   STONE (MONUMENT) CARVER                   0    0    0    0    0    0    0    0    0    0    0    0
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Figure B-20. New Jobs - 70 Report
(Sample Page)

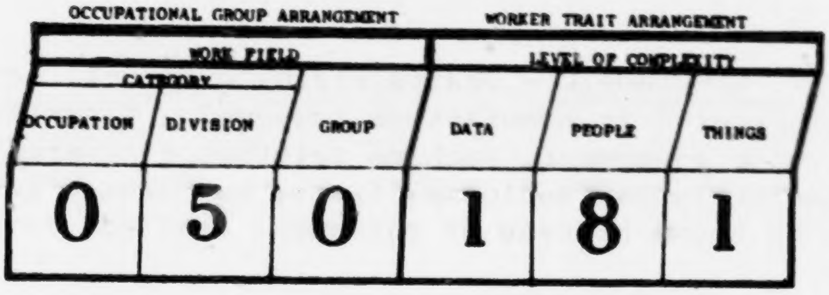
APPENDIX B-1

JOB DESCRIPTIONS

This Appendix presents a modified version of the Dictionary of Occupational Titles descriptions which relate to the job titles used in Chapter IV of this report. Each digit in the D.O.T. number has a special meaning which is as follows:

D. O. T. CODES

AND WHAT THEY REPRESENT



FIRST DIGIT IN THE CODE

0. Professional, Technical, and
1. Managerial occupations
2. Clerical and Sales Occupations
3. Service Occupations
4. Farming, Fishery, Forestry, etc.
5. Processing occupations
6. Machine Trade occupations
7. Benchwork occupations
8. Structural work occupations
9. Miscellaneous occupations

The occupations are again divided in 84 Divisions so that first two digits stand for category of work. (Example 05 Occupations in Social Sciences)

These categories are again subdivided in groups so that three digits together denote what occupational group to which a particular job belongs. (Example 050 Occupations in Economics).

(FOURTH DIGIT) DATA

0. Synthesizing
1. Co-ordinating
2. Analysing
3. Compiling
4. Computing
5. Copying
6. Comparing
7. No significant relationship
8. No significant relationship

(FIFTH DIGIT) PEOPLE

0 Mentoring
1. Negotiating
2. Instructing
3. Supervising
4. Diverting
5. Persuading
6. Speaking - Signalling
7 Serving
8 No significant Relationship

(SIXTH DIGIT) THINGS

0. Setting-Up
1 Precision Working
2. Operating-Controlling
3. Driving-Operating
4. Manipulating
5. Tending
6. Feeding-Offbearing
7. Handling
8. No significant relationship

The last three digits of the code represent inter-relation of the above listed worker traits. (EXAMPLE: .181 Technical Work (Engineering or Related Field).

001.281 DRAFTSMAN, ARCHITECTURAL - Plans artistic architectural and structural features of any class of buildings and like structures. Sketches designs and details, using drawing instruments.

003.181 TECHNICIAN, ELECTRICAL - Applies electrical theory and related subjects to test and modify developmental or operational electrical machinery and electrical control equipment and circuitry in industrial or commercial plants and laboratories. Usually works under direction of electrical engineers. However, may direct other personnel doing routine installation and maintenance.

003.181 ELECTRONICS TECHNICIAN - Applies electronic theory, principles of electrical circuits, electrical testing procedures, engineering math, physics, and related subjects to layout, build, test and service developmental and production electronic equipment, such as computers and missile-control instrumentation and machine-tool numerical controls. Normally assists electronics engineers; technician's job is more complex than routine operating or repair work.

003.281 DRAFTSMAN, ELECTRICAL - Prepares electrical equipment working drawings and wiring diagrams used for construction purposes and repair of electrical equipment and wiring in powerplants, industrial establishments, commercial or domestic buildings, or electrical distribution systems.

003.281 DRAFTSMAN, ELECTRONIC - Drafts wiring diagrams, schematics, and layout drawings used in manufacture, assembly, installation and repair of electronic equipment, such as television cameras, radio transmitters and receivers, audioamplifiers, computers, and radiation detectors. May be known by type of equipment drafted, for example, Radio Draftsman.

003.281 TECHNICIAN, INSTRUMENTATION - A person with extensive technical training who uses electronic instrumentation, electromechanical or electrohydraulic apparatus and similar devices to test mechanical, structural, or electrical equipment for specified use. Provides engineering personnel with findings to assist them in selecting equipment and in designing. May modify, construct, install, set up or check sensing, telemetering and recording test instruments, and circuitry. Operates, or directs others in operation of apparatus to test the effects of specified conditions on the equipment being tested. May also be required to plan the complete testing program.

005.181 TECHNICIAN, CIVIL ENGINEERING - Assists civil engineers in performing many tasks necessary in the planning and construction of highways, railroads, bridges, dams and other structures and facilities. May help to estimate costs, prepare specifications for materials, and may also assist contractor in scheduling activities or inspecting work.

005.281 DRAFTSMAN, CIVIL - Drafts detailed construction drawings, topographical profile and related maps and specification sheets used in planning and construction of highways, flood control, and other civil engineering projects.

007.181 MECHANICAL-ENGINEERING TECHNICIAN - Applies theory and principles of mechanical engineering to develop and test machinery and equipment, under the direction of engineers or scientists.

007.281 DRAFTSMAN, MECHANICAL - Prepares detailed working drawings of machinery and mechanical devices, including multiple-view assembly and subassembly drawings, as required for manufacture and repair of mechanisms.

010.281 DRAFTSMAN, GEOLOGICAL - Specializes in making maps, diagrams, profiles, and cross sections to represent geological stratigraphy and locations of oil and gas deposits by correlating data obtained from topographical surveys, from well logs, and from geophysical prospecting.

012.288 INDUSTRIAL ENGINEERING TECHNICIAN - A technician who studies and records time, motion, methods, and speed involved in the performance of maintenance, production, clerical, and other worker activities to establish the standard production rate. Recommends revision of methods of operation or material handling, alterations in equipment layout, or other changes to increase production or improve standards. He aids in planning work assignments.

017.281 DRAFTSMAN, MAP (Also known as Cartographer or Map Maker) - Draws maps of cities, counties, states, and other areas showing location and identity of roads, communities, commercial or industrial structure and installations, political boundaries and other features.

018.188 SURVEYOR - Surveys earth's surface and oversees engineering survey party engaged in determining exact location and measurements of points, elevations, lines, areas used for construction, mapmaking, land valuation, mining and other purposes.

019.281 QUALITY CONTROL TECHNICIAN - A technician who tests and inspects specified characteristics of products at various stages of production to determine and maintain desired quality. Evaluates data and writes summaries to show conformity to or deviation from established standards. Suggests modification of production or quality standards to achieve optimum quality and to increase efficiency.

020.188 PROGRAMMER, BUSINESS - A digital-computer programmer who converts symbolic statements of business problems to detailed logical flow charts for coding into computer language and solution by means of automatic data-processing equipment.

020.188 PROGRAMMER, ENGINEERING AND SCIENTIFIC - Converts scientific, engineering, and other technical problem formulations to a format processable by computer. Combines and applies a knowledge of advanced mathematics and an understanding of computer capabilities and limitations.

029.281 LABORATORY TESTER I - May be known as assistant chemist, research technician or tester. Performs laboratory tests according to prescribed standards to determine the chemical composition or characteristics of a given substance for purposes such as quality control, process control, product development, or determining conformity to specifications. May test raw materials for such qualities as permeability, load bearing capacity, or cohesiveness.

075.378 NURSE, GENERAL DUTY or NURSE, OFFICE - A nurse who provides general nursing care and treatment in a hospital, infirmary, sanitarium, clinic, physician's office as prescribed by physician. May work in various hospital departments; frequently assists in surgery as scrub or circulating nurse. Reports condition of patient to physician and/or supervisor and records vital information and data on patient's chart or clinical record.

075.378 NURSE, STAFF, INDUSTRIAL - A registered nurse who attends employees or others who become ill or suffer accidents on company premises. Administers first aid and also attends to subsequent dressings of employees' injuries. Maintains treatment records and prepares accident reports, assists physician in health examination programs, and cooperates in company's accident prevention program.

078.281 MEDICAL TECHNOLOGIST or BIOCHEMISTRY TECHNOLOGIST - Performs chemical, microscopic and bacteriological tests in a medical laboratory of a patient care institution or health agency. May specialize in particular field, such as biochemical analysis. May assist during autopsies or engage in medical research with emphasis on control and cure of disease.

078.368 ELECTROCARDIOGRAPH TECHNICIAN and ELECTROENCEPHALOGRAPH TECHNICIAN - A technician who operates and/or monitors special equipment used in hospitals and medical clinics to diagnose illnesses and certain disorders of the heart or brain. Attaches electrodes to specified parts of patient's body and activates equipment to produce graphic readings. Tracings of readings are prepared for medical specialists' examination and interpretation.

078.368 RADIOLOGIC TECHNOLOGIST - A technician who operates x-ray equipment, and applies roentgen rays and/or radioactive substances to patients for diagnostic and therapeutic purposes. Places patient in position to obtain desired view, and/or exposure of particular body area. Develops film and may assist physician with fluoroscopy or radioactive therapy.

078.381 MEDICAL-LABORATORY ASSISTANT - A technician who performs routine tests in medical laboratories, for use in diagnosis and treatment of disease. Works under general supervision of a medical technologist or pathologist, but makes some independent analyses, such as urinalyses and blood counts. Cleans and sterilizes glassware and laboratory equipment. May care for test animals used in medical laboratory.

078.381 TISSUE TECHNOLOGIST - A medical laboratory worker who cuts, stains, and mounts specimens of human or animal tissues for miscroscope study. May assist medical technologist or pathologist in complex analyses or autopsies.

079.368 MEDICAL ASSISTANT - A person who assists a physician in performing examinations and treatment of patients in a medical clinic, office, out-patient department of a hospital, or public health service. Prepares patient for type of service or treatment ordered by physician. May administer injections and assist physician in minor surgery. Prepares medical records as required and maintains essential stock of supplies.

079.368 OCCUPATIONAL THERAPY AIDE - An assistant who instructs patients in various arts, crafts and related activities designed to rehabilitate them through occupational therapy. May assist occupational therapist in fitting special orthopedic devices. Works under general direction of occupational therapist and reports on progress of patient's treatment.

079.378 NURSE, L.P.N. - A person who cares for ill, injured, convalescent, and handicapped persons in hospitals, clinics or other patient care facilities. Works under supervision of a professional nurse, and provides general nursing care as prescribed by a physician. May administer medications and assist in surgery and obstetrical cases.

079.378 SURGICAL TECHNICIAN - A person who assists a surgeon, and other members of a surgical team, before and during an operation. Prepares patient for surgery. Follows standard procedures for maintaining sterile condition of self and apparel. Places equipment and supplies in operating room and arranges instruments as instructed. May assist in administering blood, plasma or other injections.

139.288 WRITER, TECHNICAL PUBLICATIONS - Also known as Handbook Writer, Service Publications Writer, or Technical Editor. Writes and prepares service manuals and related publications concerned with installation, operation, and maintenance of electronic, electrical, mechanical, and other equipment.

141.081 ILLUSTRATOR - A commercial artist who draws and paints illustrations for advertisements, books, magazines, posters, billboards and catalogs. May be known as Fashion Artist and draw figures, garments and accessories for newspaper ads.

141.081 LAY-OUT MAN (print. & pub.) - Plans page layouts of illustrative material, such as sketches, photographs, and diagrams, for use in preparing newspaper advertisements, books, and technical manuals.

143. PHOTOGRAPHER; CAMERAMAN AND ALLIED OCCUPATIONS - Photograph people, events, fictionalized scenes, materials or products with still or motion picture cameras. May be called a News, Commercial or Aerial Photographer, or Television Cameraman.

160.188 ACCOUNTANT - Devises, installs and supervises operation of general accounting, budget and cost systems. May supervise workers engaged in keeping accounts and records.

168.168; 168.287 BUILDING INSPECTOR - Inspects buildings, examining for type of construction, condition of roof and fireproofing. Determines risk represented by adjoining buildings, nature of business and contents of buildings, proximity of fireplugs and firefighting equipment. Writes report upon which rates are computed. May compute insurance rates.

168.168 SAFETY MAN - Inspects properties and premises of insured to evaluate conditions of safety; makes recommendations for corrective action. Compiles and analyzes data affecting premiums. Works with insured to develop and promote safety programs. May work with civic and industrial groups to organize and promote community safety programs.

193.168 AIR-TRAFFIC-CONTROL SPECIALIST, STATION OR TOWER - Controls air traffic on and within vicinity of airport according to established procedures and policies to prevent collisions and minimize delays arising from traffic congestion. Receives and transmits flight plans, meteorological, navigational, and other information in air-traffic-control station to perform preflight and emergency service for airplane.

196.283 AIRPLANE PILOT, COMMERCIAL - Pilots airplane to transport passengers, mail, or freight for commercial purposes. Must have required license issued by Federal Aviation Agency.

199.381 RADIOGRAPHER or INDUSTRIAL X-RAY OPERATOR - Takes radiographs or x-ray of metal castings, weldments, pipes, machinery and structural members to detect flaws, cracks, porosity and presence of foreign objects.

201.368 SECRETARY (Includes legal secretaries) - Performs general office duties in relieving executives and other officials of minor executive and clerical duties.

202.388 STENOGRAPHER (Includes technical or legal stenographers, and stenotypists) - Takes dictation in shorthand of correspondence, reports, and other matter and transcribes material, using typewriter. May perform variety of clerical duties. May also transcribe from sound recordings.

205.368 PERSONNEL CLERK - Compiles and keeps personnel records concerning an establishment's employees. May administer and score aptitude, personality, and interest tests.

206.388 RECORDS CUSTODIAN - Stores bank records and oversees destruction of outdated records. Copies records and makes reproduction as requested, by filming or other methods.

209.388 CLERK-TYPIST - Performs general clerical work requiring use of typewriter in majority of duties. Compiles and types reports, bills, application forms, shipping tickets, and other matter. Files records and reports, posts information, sorts and distributes mail, answers telephone and performs similar duties.

209.388 STATEMENT CLERK - Prepares and distributes bank statements to customers, answers inquiries, and reconciles discrepancies in records and accounts.

210.388 BOOKKEEPER (HAND) - Keeps records of financial transactions of firm. Work involves most of the following: posting and balancing subsidiary ledgers, cash books or journals; posting general ledger; and taking trial balances. May calculate employee wages from records and make up payroll checks.

211.368 CASHIER - A person who receives cash from customers or others, records source and amount of such, maintains accounting controls and performs related duties as required by the principal activity of the establishment to which assigned. Prepares bank deposits; may disburse funds either by cash or check. Posts data to accounts and maintains periodic balances on receipts and disbursements.

212.368 TELLER, BANKING - Receives and pays out money and keeps records of money and negotiable instruments involved in various bank transactions. Receives checks and cash for deposit. Cashes checks and pays out money upon verification of signatures and customer balances.

213.382 CARD-TAPE CONVERTER OPERATOR - A person who operates machines designed to automatically transcribe data from punch-cards to tape, or from tape to cards. Sets up machine by making circuit connections on plugboard in accordance with prepared diagrams and programmed printing format. Monitors machine during operation and records identifying information on reels and card drawers. May use special electric typewriter.

213.382 DIGITAL-COMPUTER OPERATOR - A person who monitors and controls electronic computer equipment to process various kinds of data. Activates and controls equipment according to program, routines and data specifications outlined in operating instructions. Observes machines and control panel on computer during operation to detect errors or malfunctions.

213.582 KEYPUNCH OPERATOR - Under general supervision, and with no supervisory responsibilities, records accounting and statistical data on tabulating cards by punching a series of holes in the cards in a specified sequence. Uses an alphabetical or numerical keypunch machine, following information on records.

213.782 TABULATING-MACHINE OPERATOR - Operates machine that automatically analyzes and translates information punched in groups of tabulating cards and prints translated data on forms or accounting records; sets or adjusts machine to add, subtract, multiply and make other calculations; places cards to be tabulated in feed magazine and starts machine.

215.388 BOOKKEEPING-MACHINE OPERATOR - Records complete set, or sometimes one phase or section thereof, of records of financial transactions in same manner described under bookkeeper, using posting or bookkeeping machine.

215.488 PAYROLL CLERK - Computes earnings and posts wage data to payroll records of firm. May use calculator or posting machine.

217.388 TRANSIT CLERK - Sorts, records, proofs and prepares for mailing all transit items on out-of-city banks to insure correct routing and prompt collection.

219.388 CLEARING HOUSE CLERK - Prepares and submits checks, drafts, and other items to clearing house association for exchange and settlement with other banks.

219.388 CLERK, GENERAL OFFICE - Performs variety of clerical duties, utilizing knowledge of systems or procedures. May compile records and reports; compute wages and taxes; interview customers or employees; make cash transactions; and send out statements or invoices; etc. May use office machines.

219.388 INTEREST CLERK - Collects interest on contracts held by bank for collection. Computes interest on loans, notes and bonds. Types notices of interest and principal due and mails notices to customers. Receives and posts payment. Compiles statistics for bank's financial statement.

219.388 PROGRAMMER, DETAIL - A person who performs special clerical work in preparing program details for computer and data processing equipment. Reads and interprets different kinds of characters used for each program step, and translates such into symbolic language, convertible into machine instructions. Records symbols on worksheet for transfer to punch cards or tape.

219.388 RATER - Calculates amount of premium to be charged for various types of insurance, using rate books. May calculate commissions. May operate calculating machine.

219.388 SORTING CLERK - Sorts bank items, such as deposit slips, coupons and checks, alphabetically into groups for subsequent processing. Cancels checks, using check cancelling machine. Answers customer's inquiries relative to accounts.

219.388 WARD CLERK - A clerk who prepares and compiles records in a particular hospital nursing unit. Records personal and medical information about each patient and maintains a file of medical records on patients in unit. Prepares discharge notices to inform business office. May record hours worked and related information on personnel unit.

219.485 CURRENCY SORTER - Sorts and counts paper money, using automatic currency-counting machine. Examines money to detect and sort out counterfeit, mutilated, and worn bills. May sort, count and wrap coins.

219.488 ACCOUNTING CLERK - Performs variety of routine calculating, posting, and typing duties to accomplish accounting. For example, posts details of business transactions, computes and records interest charges, freight or express charges, rentals, or similar items. May also type vouchers, invoices, account statements, payrolls, periodic reports and other records.

219.488 INSURANCE CHECKER (POLICY CHECKER) - Verifies accuracy of insurance company records. Compares computations on premiums paid, interest and dividends due with same data on other records. Verifies data on applications and policies. Proofreads printed material concerning insurance programs. Verifies computations on interest accrued, premiums due and settlement surrender or loan values, using calculating machine.

223.387 PARTS CLERK, AUTOMOTIVE - Receives parts and stores them in bins, on floor or on shelves, according to identifying information, such as style, size, or type. Fills orders and issues spare and replacement parts from the stock. May sell parts to customers.

232.368 POST OFFICE CLERK - Receives, sorts, and cancels mail. Sells postage stamps, postal cards, U. S. saving stamps, and money orders.

233.388 MAIL CARRIER - Sorts mail for delivery and delivers mail on established route. May also deliver specialized types of mail, such as parcel-post or special delivery.

235.862 TELEPHONE OPERATOR (PBX OPERATOR) - Operates cord or cordless switchboard to relay incoming, outgoing and interoffice calls. This category also includes central-office operators employed by telephone companies.

242.368 ROOM CLERK - Accommodates hotel and motel patrons by registration and assigning of rooms to guests. Transmits and receives messages, keeps records. May use typewriter and sell tobacco, candy and newspapers

249.368 CLAIMS CLERK - Obtains claims information from insured or designated persons to settle claims with insurance carrier. Types claim forms and related reports.

249.368 CREDIT CLERK (LOAN APPLICATION) - Processes application of individuals applying for loans and credit. Interviews applicant and fills out application, verifies references and information. Notifies customer by mail or telephone of acceptance or rejection of application.

249.368 NEW ACCOUNT CLERK - Obtains information by phone or in person from customers applying for charge accounts. May also review applications received by mail. If employed by bank or public utility, interviews customers desiring to open accounts, explaining services available.

249.368 MEDICAL-RECORD CLERK - A clerk who assists a medical-record librarian. Classifies medical records of hospital or clinic patients. Keeps daily statistical record of admissions, discharges, deaths, births, and kinds of medical services given. Compiles statistics for reports and surveys.

250 thru 259 SALES OCCUPATIONS - A group of occupations involved in the sale of investments, real estate, and various type services such as radio and television time, transportation, maintenance and repair, public utilities, printing and advertising, business and educational.

250.258 SALESMAN, INSURANCE - Sells insurance on a salary or commission basis to new and present clients recommending amount and type of coverage based on analysis of prospect's circumstances. If persons work independently selling a variety of insurance such as life, casualty and marine for many companies, is known as an Insurance Broker. If single company is represented, works independently, it is known as a General Agent.

250.358 SALESMAN or BROKER (Real Estate) - Rents, buys and sells property for clients on commission basis. May hold brokerage license.

260, 289 SALESMAN AND SALESPERSON, COMMODITIES - A person who sells machinery, equipment, products, preparations, and supplies to business or industrial establishments, or to individuals, at a sales office, store or showrooms, or at the customer's home or place of business. He displays his merchandise, using samples or a catalog, or demonstrates the article, emphasizing its salable features. Estimates or quotes prices, credit terms, and trade-in allowances, if any; prepares forms and sales contracts; and may install commercial, industrial or household equipment, and collect payment for products sold.

290.000 SALES CLERK - Receives payment for merchandise selected by the customer. Keeps the shelves stocked with merchandise and may keep records of sales, prepare inventory of stock or order merchandise.

292.000 ROUTEMAN - A person who drives over an established route to deliver and sell products or render services. Loads the truck with the products sold or with the tools and equipment necessary to perform the service, and delivers the items to, or performs the service at the customer's home or place of business.

310.868 HOSTESS, RESTAURANT or COFFEE SHOP - Welcomes patrons, seats them at tables or in lounge. Communicates with other employees to insure quality and promptness of service. Schedules dining reservations and may arrange parties or special services for diners.

311.878 WAITRESS or WAITER - Serves food or beverage to patrons in dining rooms, restaurants, or other eating facilities.

313.131 CHEF - Supervises, coordinates, and participates in activities of cooks and other kitchen personnel engaged in preparing and cooking foods in hotel, restaurant, cafeteria, or other establishments.

313.381 COOK - Prepares, seasons and cooks by appropriate method, a wide variety of foodstuffs. May be designated according to type of food prepared or meal served, i.e. Dinner Cook.

316.884 MEAT CUTTER or BUTCHER - Cuts and trims meat to size for display or as ordered by customer, using handtools and power equipment, such as grinder, cubing machine and power saw.

319.138 FOOD SERVICE SUPERVISOR - A person who supervises employees engaged in preparing and serving food in a hospital, nursing home, hotel or restaurant. Instructs individual workers in methods of performance, and coordinates work of department to promote efficiency of operation. Usually follows menus planned by dietitian (full-time or consultant) but utilizes acquired knowledge of patients' dietary needs and food preparation to exercise independent judgment. Purchases or requisitions foodstuffs, maintains records and prepares reports related to dietary service.

321.138 HOUSEKEEPER - Supervises work activities of cleaning personnel to insure clean, orderly, attractive rooms in hotels, hospitals and similar establishments. Assigns workers their duties; keeps inventory of supplies, and may keep record of employees' work schedule and hours worked.

355.878 NURSE AIDE - ORDERLY - A non-licensed worker who assists in care of patients in a hospital or nursing home. Works under direction of nursing and medical staffs in performing routine and simple tasks of patient care, such as bathing, serving food, and moving patients within the hospital. Includes practical nurses without a license.

355.878 PSYCHIATRIC AIDE - An attendant who works under direction of nursing and medical staff in a mental hospital. Assists patients in accomplishing such personal functions as bathing, dressing, and feeding. Gives special care to those patients requiring more than routine attention and may administer medications prescribed by a physician. Assists in promoting patients' participation in social and recreational activities.

373. FIREMAN - A group of occupations concerned with fighting fires; inspecting fire-fighting equipment, plants, amusement houses, and other establishments. Detects unsafe conditions and recommends improvements or repairs to reduce fire hazards. Category also includes fire chief and other commanding officers.

375. POLICEMEN OR DETECTIVES - A group of occupations concerned with protecting the public. Maintains law and order; detects and prevents crime; directs and controls motor traffic; and investigates and apprehends criminal suspects. Category also includes police chief and other commanding officers.

377. SHERIFFS OR BAILIFFS - A group of occupations concerned with enforcing law and order in rural or unincorporated districts, maintaining order in court, and serving summonses. Also includes Deputy Sheriffs.

407.884 GROUNDS KEEPER - A person who maintains grounds of industrial, commercial, institutional or public property. Uses manual and power operated equipment to cut lawns, trim hedges, and care for shrubs and trees. Cleans flower beds, rakes leaves and clears sidewalks and drives.

421.883 FARM HAND, GENERAL - Works on farm devoted to diversified agriculture, performing duties requiring knowledge of livestock and crops and maintenance of structures and equipment. Tends livestock and poultry, observing general condition and administering simple medications to animals and fowls. Usually works year-round and may supervise casual and seasonal help during planting and harvesting.

500.380 PLATER (Electroplating) - Sets up and controls plating equipment to coat metal object electrolytically with chromium, copper, cadmium or other metal to provide protective surfaces or to build up worn surfaces according to specifications.

504.782 HEAT TREATER - Controls heat-treating furnaces and quenching equipment to alter physical and chemical properties of a variety of metal objects by methods of controlled heating and cooling, such as hardening, tempering, annealing, casehardening and normalizing.

514.884 CASTER (Ore dressing,smelting and refining) - A metal pourer. Casts non-ferrous metal into pigs and transports them to storage, using handtools and forklift.

515.782 GRINDING-MILL OPERATOR - Operates a panel board to control machinery and equipment, such as conveyor belts, vibrating feeders, rod and ball mills, centrifugal separators, distributors, magnetic separators, and pumps to grind ore and to separate iron particles from gangue.

518.381 COREMAKER - Makes sand cores used in molds to form holes or hollows in metal casting.

518.381 MOLDER - Makes sand molds for production of metal castings, using handtools, power tools, patterns, and flasks and applying knowledge of variables such as metal characteristics, molding sand, contours of patterns, and pouring procedures.

520.782 DOUGH MIXER - Weighs or measures, sifts and mixes ingredients, by hand or machine, to make straight and sponge (yeast) doughs according to formula.

521.782 GRINDER OPERATOR - Grinds grain into meal or flour, adjusting feed chutes to regulate flow of grain to rollers. Adjusts roller pressure for grain size and hardness of each batch. Inspects flour or meal by sifting it through fingers, winnows, chaff from sample to estimate yield, adjusting rollers accordingly. Opens and closes spouts to route grain to various grinders and sifters.

525.381 BUTCHER, ALL-ROUND - Performs all slaughtering and butchering operations, stuns and bleeds animals, trimming and removing heads, skinning and trimming and cleaning hides. Reduces carcasses, eviscerating, sorting and washing edible viscera, shaving hog carcasses, washing and wrapping muslin about dressed carcasses, boning standard cuts of meat for marketing, and examining, weighing, and sorting cuts of fresh pork. May prepare meats for smoking, cut and wrap meat, or trim, clean, and salt hides.

525.387 GRADER, MEAT - Grades carcasses as to sales value, basing evaluation on age, sex, build, shape and thickness of meat, amount and distribution, color and texture of fat, and marbling of lean meat.

525.884 BONER OR SKINNER - Cuts bone from and trims standard cuts of meat, or severs and removes from carcasses heads, tails, lungs, and genitalia, severs and ties gullet to prevent leakage of fluids, slits cattel wombs and removes and skins slunk, and slits hide of carcass and pulls it loose, by hand or using pinchers, breaking connective tissue.

526.781 BAKER - Weighs or measures ingredients according to formula. Combines and mixes materials to make batters, doughs, fillings, and icings. Rolls, cuts, and shapes dough and completes process of baking. Checks oven temperature and makes adjustments as necessary. Applies glaze, icing, or other topping to baked goods. May specialize in one type of product.

542.280 STILLMAN - Analyzes specifications and controls continuous operation of petroleum refining and processing units to produce products, such as gasoline or lubricating oils, by such methods as distillation, polymerization, absorption, and the like. May be designated according to process involved or plant operated as Absorption-Plant Operator or Cracking Unit - Stillman.

549.380 PUMPMAN - Plans movement of crude, semiprocessed, and finished petroleum products, water, and chemical solutions through lines to processing, storage, and shipping units, according to interconnections and capacities of pipelines, valve manifolds, pumps, and tankage, and synchronizes it with other pumphouses to ensure continuous flow and minimal contamination of products.

572.782 BATCH AND FURNACE MAN (glass mfg.) - Controls automatic equipment to weigh, mix, and melt ingredients to make glass. Collects sample of molten glass for laboratory analysis, and records production data.

575.781 CONCRETE-STONE FABRICATOR - Casts mixture of concrete and aggregate in a mold to form plain or decorative structural panels following drawings, specifications, and approved samples.

575.782 BOTTLE-MACHINE OPERATOR, GLASS - Operator, glass - sets up and operates machines that automatically press and blow molten glass to form bottles and other glass containers in accordance with specifications. Weighs and examines bottles for defects, such as checks, scratches, and seeds. Verifies height, diameter, and eccentricity of bottles using fixed gages.

575.782 BRICK-AND-TILE-MAKING MACHINE OPERATOR - Sets up and operates series of machines to mix ingredients, extrude clay mixture, and to cut extruded column into brick and tile products. Examines and records production.

575.885 CONCRETE-PIPE-MAKING-MACHINE OPERATOR - Tends machine that makes concrete draintile or pipe. May be designated according to type of product made as Drain-Tile Machine Operator; or according to type of machine tended as Packerhead-Machine Operator.

600.280 MACHINIST (ALL-ROUND) - Studies specifications, blueprints, or sketches; plans work sequence; measures and marks dimensions and reference points to lay out stock for machining. Sets up and operates lathe, milling machine, shaper, or grinder to machine parts to specifications. Uses handtools, such as files, scrapers, and wrenches, to fit and assemble parts, verifying dimensions and alignment with micrometers, height gages, and gage blocks.

600.280 INSTRUMENT MAKER - Makes, modifies, or repairs mechanical instruments or mechanical assemblies of electrical or electronic instruments such as barographs, seismographs, thermostats, and servomechanisms, using machine tools, handtools, welding and heat-treating equipment, and precision measuring instruments according to blueprints or sketches.

600.281 MACHINE BUILDER - Fits and assembles metal components according to assembly blueprints, manuals and knowledge of machine construction to construct, rebuild, and repair machines and equipment using hand or power tools.

600.381 LAY-OUT MAN (Machine Shop) - Lays out metal stock or workpieces, such as castings, plates, or machine parts, to indicate location and dimensions of processing to be done, such as machining, welding or assembly.

601.381 TEMPLATE MAKER - Designs and fabricates templates of wood, paper, sheet metal, and plastic used for laying out reference points and dimensions on metal plates, sheets, tubes, and structural shapes for fabricating. welding, and assembling into structural metal products.

603 thru 609 MACHINE SET-UP OPERATOR - A group of occupations that are concerned with setting up and operating one or more machines; for example, engine lathe, turret lathe, boring mill, milling machine, radial drill press, gear-cutting machine, gear hobber, screw-machine and machines of similar complexity. Set-up operator prepares the machine tools for production operators. May also instruct and supervise them. When not setting up machines, he may work as a regular operator though still in a "senior" or "leader" capacity.

603.280 PRECISION GRINDER (Machine Shop) - Operates one of several types of precision grinding machines to grind internal and external surfaces of metal parts to a smooth and even finish and to required dimensions. Primarily does a finishing operation on previously machined parts, and job consists of applying abrasive wheels rotating at high speeds to the surfaces to be ground. Includes the following types of machines: centerless-grinder, cylindrical-grinder, external-grinder, internal-grinder, surface-grinder, universal-grinder, and other production grinding machines such as drill, broach, and gear cutter grinders.

609.885 MACHINE-TOOL OPERATOR, PRODUCTION - Tends one or more of a variety of power-driven machine tools, including lathes, drill-presses, milling-machines, grinders, screw-machines or other special purpose machines to machine metal work pieces to specifications. Machines have been previously set up and this operator makes only minor adjustments.

611.782 FORGING-PRESS OPERATOR - Sets up and operates closed-die power press to produce metal forgins, following work order specifications and using measuring instruments and handtools.

612.380 DIE SETTER (Forging) - Sets up forging machines, such as forging presses, coining presses, drophammers, forging rolls, and upsetters, following blueprint, work order, and data-chart specifications, and using handtools and measuring instruments.

615.782 (POWER) SHEAR OPERATOR - Sets up and operates power shear to cut metal objects, such as plates, sheets, billets, or bars to specified dimensions and angle.

615.782 PUNCH-PRESS OPERATOR - Sets up and operates power press to trim, punch, shape, notch, draw or crimp metal stock between dies. May be known by type of machine used as Multi-Punch-Press Operator, or by function of machine as Draw-Press Operator or Forming-Press Operator.

617.280 PRESS OPERATOR, HEAVY DUTY - Sets up and operates heavy-duty press to bend, form, and straighten metal plates, structural shapes, forgings, and weldments as specified by blueprints, layout and templates. May be known as an operator of a bending press, bull-press, hydraulic-press or a toggle-press.

617.380 (POWER) BRAKE OPERATOR - Sets up and operates power brake to bend, notch, punch, form, roll, arc, or straighten metal plates and structural shapes to blueprint and sketch specifications. May be known as Press Brake Operator or Sheet Metal Brake Operator.

619.380 METAL FABRICATOR - Fabricates and assembles structural metal products, such as framework or shells for buildings and bridges according to job order or blueprints. May fabricate and assemble sheet metal products, and may set up and operate machine tools, such as radial drill press, and mill and edge planer. Category also includes Boilermaker who assembles and repairs boilers and related pressure vessels in shops. Also includes Ornamental-Metal Worker who fabricates architectural building parts of ornamental design.

619.782 ROLL OPERATOR - Operates rolling machine to bend metal plates, sheets, or bars into arcs, cylinders, or cones, or to bend sheet metal to specified curvature. Utilizes blueprints, templates, and knowledge of metal to set up machine and plan sequence of operations. Category also includes Angle-Roll; Vertical-Roll; Flanging-Roll; Sheet-Metal Roll Operators.

620.281 MECHANIC, AIR-CONDITIONING (Automobile) - Installs and repairs automotive air-conditioning units. May specialize only in installation, and be designated as Automotive Air-Conditioner Installer.

620.281 MECHANIC, AUTOMOBILE - Repairs automobiles, motor trucks or tractors. Work involves most of the following: examining automotive equipment to diagnose source of trouble; disassembling and overhauling engines and performing repairs and replacements to various component parts of the vehicle.

621.281 FLIGHT ENGINEER - An aircraft mechanic who makes preflight, inflight, and post-flight inspections, adjustments, and minor repairs to aircraft. Inspects plane for possible defects or malfunctioning according to a standard checklist. Makes inflight repairs and adjustments and reports malfunctions not corrected during flight to ground maintenance crew. Must be licensed by FAA.

621.281 MECHANIC, AIRCRAFT AND ENGINE - Services, repairs, and overhauls aircraft and aircraft engines to insure air worthiness. May be known as airframe-and-powerplant mechanic. May specialize in engine repair and be designated as aircraft-engine mechanic or aircraft-engine installer or assembler. Excludes jet engine specialists shown separately.

621.281 MECHANIC, AIRCRAFT JET ENGINE - Specializes in the service, repair and overhaul of jet aircraft engines.

621.781 MECHANIC, AIRCRAFT ACCESSORIES - Repairs, assembles, and tests aircraft accessories, e.g., power brake units, auxiliary electric motors, carburetors, spark ignitors, valves, and hydramatic and vacuum pumps, according to shop orders and factory specifications.

624.281 MECHANIC, FARM EQUIPMENT - Maintains, repairs, and overhauls farm machinery, equipment, and vehicles, such as tractors, harvesters, pumps, tilling equipment, trucks, and other such mechanized, electrically powered, or motor-driven equipment, on farms or in farm equipment repair shops.

625.281 MECHANIC, DIESEL - Repairs and maintains diesel engines used to power machines, such as buses, trucks, railroad trains, electric generators and construction equipment, using handtools, precision measuring instruments and metal working tools.

633.281 OFFICE MACHINE SERVICEMAN - Repairs and services office machines such as adding, accounting, and calculating machines, and typewriters, using handtools, power tools, micrometers, and soldering and welding equipment.

637.281 MECHANIC, AIR-CONDITIONING OR REFRIGERATION - Installs and repairs industrial or commercial refrigerating and cooling systems according to blueprints and engineering specifications, using knowledge of refrigeration, structural layout and function and design of components.

638.281 MECHANIC, MAINTENANCE - Repairs and maintains machinery and mechanical equipment of an establishment, making all necessary adjustments for operation.

650.582 LINOTYPE OPERATOR - Operates a machine to cast complete lines of type from metal, and to deposit them in a galley-form for printing.

651.782 CYLINDER-PRESSMAN - Sets up and operates a cylinder-type printing press. Adjusts press controls, inking fountains and automatic feeders and repacks cylinder with overlay to equalize off-level areas as required. May be known as Flatbed-Pressman, by kind of material printed, size of press or by trade name. For example, Kelly-Pressman or Miehle-Pressman. Normally supervises a Cylinder-Press Feeder.

651.782 OFFSET-PRESSMAN - Operates offset press, stacks paper of the size, color, and type specified on the press feeder, inks rollers with ink of the specified color, installs plate on the plate cylinder and locks into position, and starts press to run off proof. Notes and makes necessary adjustments, restarts press and prints specified number.

660.280 CABINETMAKER - Constructs and repairs wooden articles, such as store fixtures, office equipment, cabinets and high-grade furniture, using woodworking machines and handtools. Normally follows blueprint specifications.

669.380 MILLMAN (Woodworking) - Sets up and operates a variety of woodworking machines to shape lumber and fabricate parts for wood products, such as doors, frames, sashes and furniture. Follows specifications and periodically checks dimensions of parts to verify accuracy of performance.

705.884 BENCH GRINDER - Moves metal objects, such as castings, machine parts, sheet metal subassemblies, or arrowheads, against abrasive wheel of bench grinder to grind, smooth, or rough-finish objects to specifications.

706.884 ASSEMBLER, PRODUCT - Assembles metal products, such as valves or hydraulic cylinder, partially or completely, working at bench or on shop floor. Usually specializes in assembly of one type of product. This category normally covers workers in job repair and production machine shops.

710.281 INSTRUMENT MAN - A skilled mechanic who installs, repairs and adjusts indicating, recording, telemetering and controlling instruments used to measure and control variables, e.g., pressure, fuel flow, temperature, motion, force, or chemical composition. Includes aircraft instruments.

720.281 RADIO and TELEVISION REPAIRMAN - Adjusts and repairs radios and television receivers. Tests voltages and resistances of circuits to isolate defect, using voltmeter, oscilloscope and other electronic testing instruments. Tests and changes tubes, solders loose connections and repairs or replaces defective parts, using handtools and soldering iron.

721.281 ELECTRIC-MOTOR REPAIRMAN - Repairs electric motors, generators and accessory equipment, such as starting devices and switches, using hand or power tools, precision gages and electrical test instruments. May be designated as to part repaired, such as Commutator Repairman or Starter Repairman. May be known as Automotive-Generator-and-Starter Repairman.

726.781 ASSEMBLER, ELECTRONICS - Assembles electronic equipment, such as computers, movie sound recorder, radar and sonar, machine-tool numerical control devices, and telemetering systems, using test equipment, hand or power tools, according to blueprints, wiring diagrams, and factory standards.

741.884 PAINTER, SPRAY - Spray paints surfaces, cleans dirt and grease from the object to be painted, washes areas not to be coated, fills dents and cavities with putty to form smooth surface, selects and mixes the paint, enamel, lacquer, or other coating, fills spray container and connects gun to airhose, adjusts sprayer to regulate width and pressure.

763.381 FURNITURE FINISHER - Finishes or refinishes damaged and used furniture, or new high-grade furniture to specified color or quality. Prepares article for finishing, using handtools, equipment and materials suited to preparation process. Applies appropriate finishing products, utilizing knowledge of wood properties, finishes, and furniture styling.

763.884 FURNITURE OR HARDWARE ASSEMBLER - A worker who performs assembling operations in a furniture manufacturing plant. Uses handtools, clamps and various materials to assemble wooden parts and hardware such as drawer pulls and locks - - to form a complete item of furniture. May specialize in particular article of furniture and be designated accordingly.

780.381 FURNITURE UPHOLSTERER - Repairs and rebuilds upholstered furniture, using handtools and a knowledge of fabrics and upholstery methods. May operate a sewing machine, repair the wooden framework of the piece or refinish the wooden parts.

781.884 CUTTER, HAND or MACHINE - Cuts single or multiple layers of fabric into parts for articles such as garments, using shears or electric cutter. Cuts along edges of pattern or along markings on material and drills holls or cuts notches along edges of material to mark parts for assembly.

785.381 SEAMSTRESS - Makes, alters, and repairs garments, such as coats, dresses, or skirts, according to pattern or customer specifications, sewing either by hand or by sewing machine.

786. & 787. SEWING MACHINE OPERATOR - Operates single or multiple needle sewing machine to join garment parts, or join parts in the manufacture of upholstery, awnings, carpets, gloves, hats or textile bags. Selects thread according to specifications and guides machine speed by pressure foot or knee control. May oil the machine and change the needle.

801.781 STRUCTURAL-STEEL WORKER - As a member of a crew, may raise, place, and unite girders, columns, and other structural-steel members to form completed structures or structure frameworks. May also be known as Ironworker.

804.281 SHEET-METAL WORKER - Journeyman who fabricates, assembles, installs and repairs sheet-metal products and equipment, such as control boxes, drainpipes, ventilators, and furnace castings, according to job order or blueprints.

806.381 ASSEMBLER, AIRCRAFT STRUCTURES AND SURFACES - Assembles tail, wing and fuselage sections of airplanes and missiles from subassemblies, e.g., frames, bulkhead doors, stabilizers and landing gear, following blueprints, using handtools and measuring instruments.

807.381 AUTOMOBILE-BODY REPAIRMAN - Repairs damaged bodies and body parts of automotive vehicles, such as automobiles and light trucks.

807.884 ASSEMBLER, SUBASSEMBLY (Aircraft) - Assembles parts, such as spars, ribs, and braces, to form structural subassemblies, e.g., air foils, rudders, flaps, stabilizers, elevators, ailerons, etc., according to specifications.

809.381 LAY-OUT MAN - Lays out reference points and dimensions on sheets, plates, tubes and structural shapes for fabricating, welding, and assembling into structural metal products. May be known as Sheet-Metal Lay-Out Man or Structural-Steel Lay-Out Man.

810.782 WELDING-MACHINE OPERATOR - Sets up and operates arc or gas welding machine which automatically welds together parts of fabricated metal products according to specifications.

810.884, 812.884 WELDER - Welds metal objects together using oxyacetylene-torch or arc-welding apparatus in the fabrication of metal shapes and in repairing broken or cracked metal objects. In addition, may also lay out guide lines on metal parts and may use cutting torch.

816.782 FLAME-CUTTING-MACHINE OPERATOR - Sets up and operates flame cutting machines which cut metal plates and structural shapes to dimensions and bevel specified.

816.884 FLAME-CUTTER, HAND - Cuts, trims or scarfs metal objects to dimensions, contour or bevel, specified by blueprint, layout or instructions, using flame-cutting torch. May dismantle metal assemblies such as automobiles, machines, and pipelines, or prepare scrap metal for shipping.

821.381 LINEMAN - Erects wood poles and prefabricated light-duty metal towers, cable and related equipment to construct transmission and distribution powerlines used to conduct electrical energy; or, may install and repair telephone and telegraph lines (wires and cables) according to diagrams, and using electricians' handtools.

823.281 RADIO MECHANIC - Tests and repairs radio transmitting and receiving equipment in accordance with diagrams and factory specifications, using handtools and electrical measuring instruments. Required to have FCC license.

824.281 ELECTRICIAN - A journeyman who performs a variety of electrical trade functions in the installation, maintenance or repair of equipment for generating, distribution and/or utilization of electric energy in an establishment.

825.381 AIRCRAFT MECHANIC, ELECTRICAL - Lays out, assembles, and installs radio and electrical systems in aircraft and missiles according to specifications. Included are such units as switches, electrical controls, and junction boxes. Tests units, using precision testing equipment, and adjusts or repairs malfunctioning units.

827.281 HOUSEHOLD APPLIANCE REPAIRMAN - Repairs gas and electric appliances and equipment, such as refrigerators, ranges, washing machines, hot water heaters, toasters and irons, using handtools. Advises customer on use and care of appliances, and may estimate cost of repairs.

828.281 ELECTRONICS MECHANIC - Tests components and circuits of faulty electronic equipment to locate defects, and repairs, replacing defective components and wiring and adjusting mechanical parts, and aligns, adjusts, and calibrates equipment according to specifications.

840.781 PAINTER and/or PAPERHANGER - Applies coats of paint, varnish, stains, enamel or lacquer to decorate and protect interior or exterior surfaces, trimmings and fixtures of buildings and other structures. If paperhanger, covers interior walls and ceilings of rooms with decorative wallpaper or fabric.

842.781 PLASTERER - A journeyman who applies coats of plaster to interior walls, ceilings, and partitions of buildings to produce finished surface, according to blueprints, drawings or instructions.

842.884 DRY-WALL APPLICATOR - Applies plasterboard or other wallboard to ceiling and interior walls of buildings. Cuts and fits wallboard, using handtools.

844.884 CEMENT MASON or CONCRETE FINISHER - Smooths and finishes surfaces of poured concrete floor, walls, sidewalks or curves to specified texture, using handtools.

845.781 PAINTER, AUTOMOBILE (Auto Service) - Paints or repaints automotive vehicles, such as automobiles, buses, and trucks. May remove old paint from vehicle and cover bumpers, windows, and chrome with tape and paper.

859.883 HEAVY EQUIPMENT OPERATOR - Operates a variety of heavy industrial and construction equipment such as cranes, industrial truck, fork lift, dumper, bulldozer etc. May help the maintenance crew to clean and oil the machines.

860.381 CARPENTER - A journeyman who constructs, erects, installs or repairs structures and wood fixtures, using hand or power tools. Usually works from blueprints or other instructions.

861.381 BRICKLAYER - A journeyman who lays building materials, such as brick, structural tile, concrete cinder, glass, gypsum, terra cotta block, to build or repair walls, partitions, sewers and other structures.

861.781 TILE SETTER OR TERRAZZO WORKER - A craftsman who covers interior or exterior walls, floors or other surfaces with tile or terrazzo. Follows design specifications and blueprints and usually works with material indicated by his job title.

862.381 PLUMBER or PIPEFITTER - A journeyman involved in the complete or partial assembly, installation or repair of air, gas, water, steam and waste disposal systems in dwellings, buildings, or plants, working from blueprints or other instructions.

864.781 FLOORLAYER - Applies blocks, strips or sheets of shock-absorbing, sound-deadening, or decorative covering to floors, walls and cabinets. May be designated according to type of floor laid, such as Linoleum Layer, Asphalt-Tile Floorlayer, etc.

866.381 ROOFER - Covers roofs with roofing materials, other than sheet metal, such as composition shingles or sheets, wood shingles or asphalt and gravel.

899.281 MAINTENANCE MAN - Inspects, dismantles, and repairs machinery, plumbing, physical structure, and electrical wiring and fixtures of commercial and industrial establishments. Replaces worn parts or components and cleans and lubricates moving parts of machinery. Maintains building and utility systems.

899.381 MAINTENANCE MAN, BUILDING - Repairs and maintains physical structures of commercial and industrial establishments. Performs painting, plumbing, electrical repair, carpentry work, and plastering.

950.782 STATIONARY ENGINEER - Operates and maintains stationary engines and mechanical equipment, such as steam engines, air compressors, generators, motors, turbines and steam boilers, to provide utilities, such as light, heat or power for buildings and industrial processes. May be known as maintenance engineer, operating engineer or power plant operator.

952.782 POWER PLANT OPERATOR - Operates boilers, turbines, generators, and auxiliary equipment, monitoring control board and regulating equipment by adjusting controls. Corrects abnormal conditions and notes malfunctions of equipment, instruments, or controls on his log sheet.

957.282 TRANSMITTER OPERATOR - Operates and maintains radio transmitter to broadcast radio and television programs. Must possess FCC radiotelephone license. Also known as Transmitter Engineer.

972.382 PHOTOLITHOGRAPHER - Sets up camera, mounts art or printed matter on copy board. Enlarges or reduces material, selects and places screen over negative to break up shadings for half-tone printing, places color filters over film to produce color or half-tone separation, and process prints for multi-color printing; focuses lens, adjusts lights, and exposes film. Develops and dries film or glass plate and prepares film or glass plate positives by contact method from negatives, to be used in preparing lithographic printing plates.

APPENDIX C

DOCUMENTATION OF THE COST DATA SUBSYSTEM

Objective

The objective of the subsystem was to acquire cost information which was utilized in Chapter III in order to help determine the program mix.

Procedure

Existing data on total expenditures of vocational and technical education as well as total expenditures by program service area were obtained through the fiscal office of the State Department of Vocational and Technical Education.

The OTIS staff used these data to calculate the average cost per student per year in Chapter III. The average cost per student per year was derived by dividing the total amount of dollars actually expended in the program service division by the number of students enrolled in that program service division. The total number of students enrolled included all students; secondary, postsecondary and adult. This was due to the fact that the expenditure data was reported for the total enrollment and could not be refined into the desired full-time category at this time. Therefore, the figures used were considered as indicators for relevant comparisons and estimates only.

APPENDIX D

DOCUMENTATION OF THE GRADUATE FOLLOW-UP SUBSYSTEM

Objectives

The objective of this subsystem is to collect follow-up data on vocational and technical training graduates for:

(a) studies of mobility patterns, and

(b) economic benefit studies for a cost-benefit report.

Procedures

This subsystem was designed to handle a large (20,000 students) follow-up. It can be divided into two phases, i.e. data collection and processing and data dissemination (See Figure D-1 for a graphic overview of this subsystem).

The following steps were used to collect and process follow-up data.

Step 1 - Design of the First Follow-up Questionnaire

After consultation with the Oklahoma Research Coordinating Unit, the Manpower Research and Training Center and UARCO (business forms company) analysts, the first follow-up questionnaire (See Figure D-2) was designed. This instrument was preprinted on continuous computer paper with the return card inside the envelope.

Step 2 - Mail Out and Return of the First Follow-up Instrument

Two thousand of these instruments were sent to private school graduates using a non-profit bulk postal rate (1.6 cents each). The computer was used to print names and addresses plus the student ID number (social security number when available) on the instrument. The ID number was printed on the return card through the use of carbon on the envelope. At this postal rate, the questionnaires were not forwarded nor returned when addresses were not accurate. The next batch of instruments (2,000 private graduates and 15,000 public school graduates) were prepared in the same manner but were mailed using a first class postal rate to alleviate the above mentioned problem. There was a ten percent return.

Step 3 - Correction of Bad Addresses

The addresses on the unclaimed forms where students could not be traced were coded on the student characteristics tape (Source of names and addresses for all steps in this subsystem - see Appendix A for a description) so that they would not be included in future follow-ups.

Step 4 - Design of the Second Follow-up Instrument

A folded card was selected for the second follow-up instrument delivery mechanism (See Figure D-3) due to printing cost, printing time and lower postal rates available. Only the introduction was modified to reflect specific occupational training areas which the student could identify. Each questionnaire had an identification number preprinted on the return card.

Step 5 - Mail Out and Return of the Second Questionnaire

Gum labels were printed, using the student characteristics tape, on students who had not returned the first questionnaires. These gum labels contained a computer assigned identification number which was matched to a corresponding ID number on the instruments. The cards were mailed at a first class postal card rate. An additional 10 percent of the total student population returned this instrument.

Step 6 - Design of the Third Follow-up Questionnaire

Dr. David Pucel from the University of Minnesota was called as a consultant during the third modification of the introduciton to the questionnaire. He had successfully completed a follow-up study of 3,500 students in Minnesta over a two-year period from 1967 until 1969. The OTIS staff decided that many of his procedures, which were highly personalized, were not feasible for a follw-up of the magnitude involved in this study. A new reminder was printed. The new format of the questionnaire included a new approach to the introduction, in which the student was identified by name and his program service area, and a change in the color of the card. An example of this card may be seen in Figure D-4.

Step 7 - The computer tape was updated with returns from the first reminder of the questionnaire and gummed labels were printed incorporating the name and address of those who had not responded thus far. Eleven thousand public school and 2,000 private school gummed labels were stuck to the cards matching the new identification number assigned by the computer with the number preprinted on the card. A return of 14 percent of the total was recorded.

Step 8 - A random sample of 100 names and addresses, stratified on the program service areas, was taken from the non-respondents to the follow-up questionnaire and the persons were contacted by telephone. Ninety-one persons were located, and others had either moved, leaving no forwarding address, deceased, or could not be traced at all. A chi square test on these returns revealed no significant difference as compared with the returns from the questionnaire received.

Step 9 - After updating the computer tape with the returns from all the questionnaires, a simple frequency count was run to confirm the rate of return, which was determined at 37.2 percent of the public school students and 43.5 percent of the private school students.

Figure D-5 gives an overview of the follow-up analysis run on the computer.

Step 10 - The 'Through Teacher' Follow-up

Acting in conjunction with the Oklahoma Research Coordinating Unit, the OTIS staff aided in a second type of follow-up which utilized teachers to collect data. Follow-up data cards (See Figure D-6) were punched from the student characteristics tape and distributed to teachers by the Oklahoma Department of Vocational and Technical Education. The teacher completed a follow-up data card for each student and returned the card to the Research Coordinating Unit. The cards were then analyzed.

Step II - Comparing the Two Types of Follow-up

Using question four on the RCU follow-up card and question two on the OTIS follow-up questionnaire, a comparison of the two follow-ups was made. This comparison indicated that the teachers were conservative in their estimates of the number of students who received employment.

Step 12 - Preparing Reports and Data Summaries

The data from the direct student follow-up was compiled on computer tape 5 (See Figure D-7). Using this tape, the following reports will be compiled.

(a) Mobility Patterns Report - based on the zip code of the training site and the zip code of the present job (presently being done as a Masters thesis by Mr. Bryn Whatley).

(b) Subsequent Employment of Graduates - based on entering a field related to training (presently being done as a Doctoral dissertation by Mr. Lonnie Holmes).

(c) Salaries Received by Graduates - based on variations between program service divisions.

The following is a breakdown of report dissemination (Phase 2).

(a) Mobility patterns report will be given to the Oklahoma Department of Vocational and Technical Education, the Oklahoma Employmen Security Commission and used internally to update supply-demand regions.

(b) Subsequent Employment of Graduates Report will be given to the Oklahoma Department of Vocational and Technical Education and used internally for the Economic Benefit Report.

(c) Salaries Received Report will be given to the Oklahoma Department of Vocational and Technical Education and used internally for the Economic Benefit Report.

Cost

As no separate values could be placed on the OTIS staff's time devoted to this component, only the cost of printing, materials, and computer time have been included in computing the total costs. On the basis of 20,000 follow-up subjects, the cost on account for the above mentioned components comes to 43 cents per record.

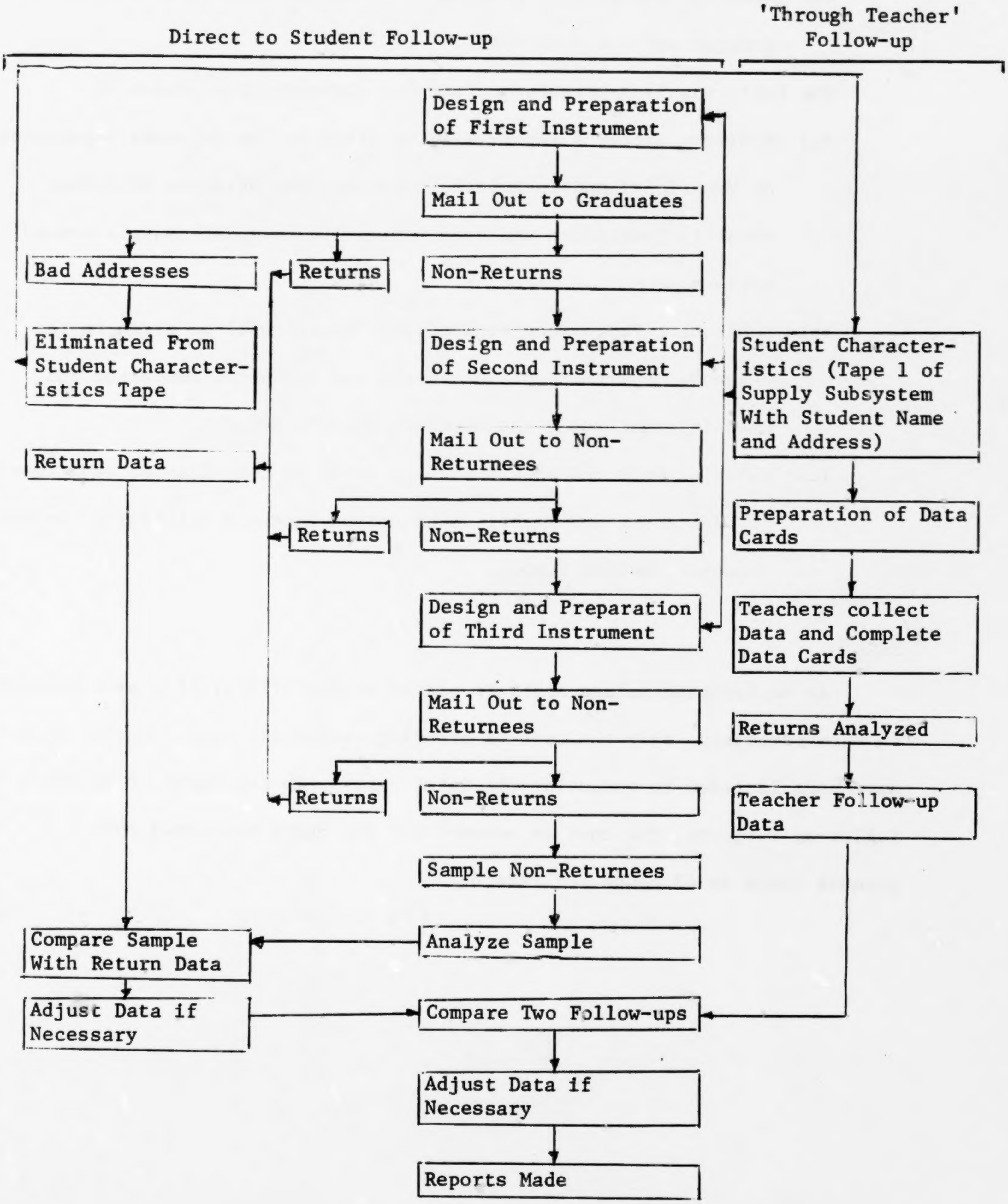
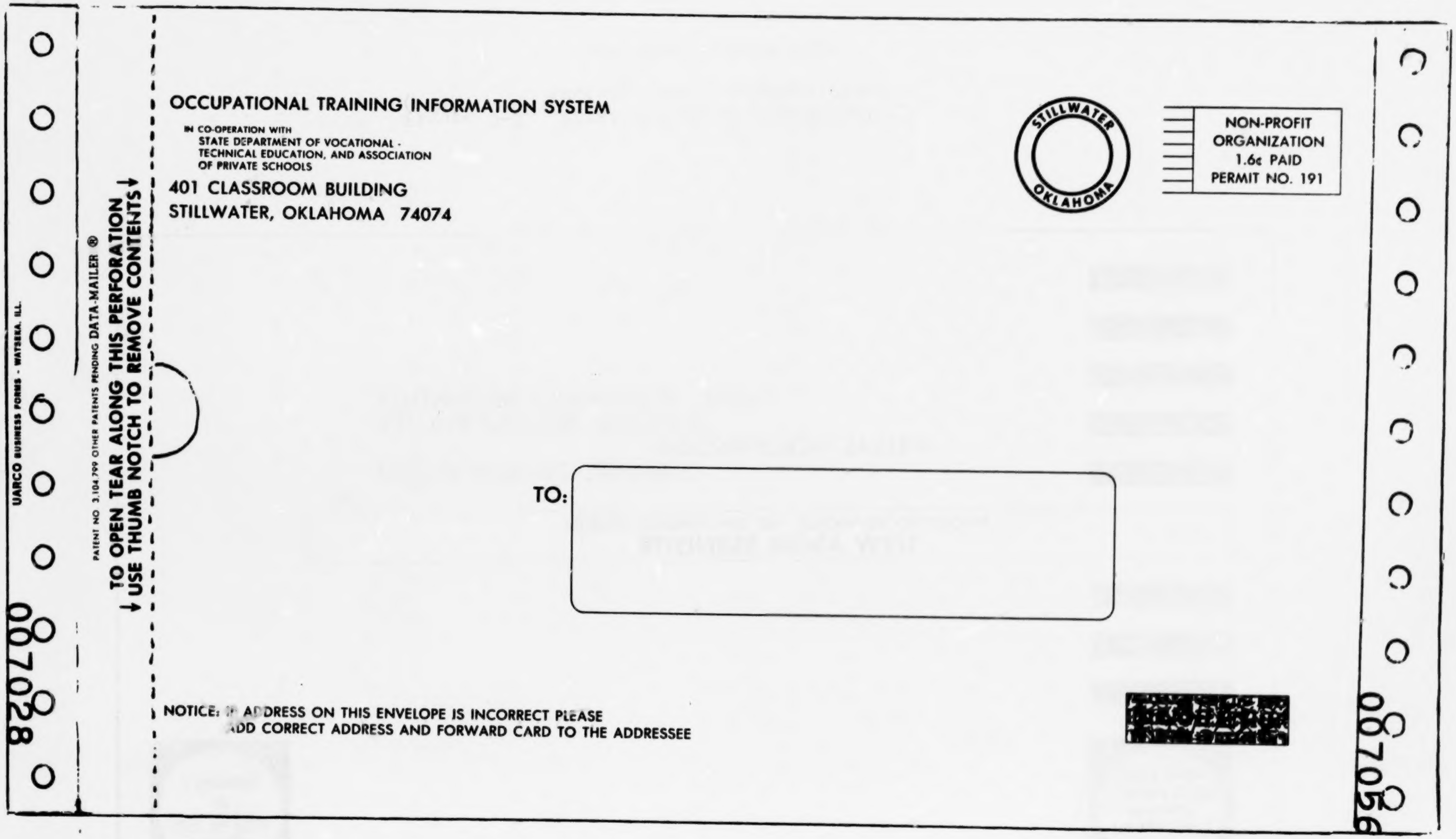

Direct to Student Follow-up
'Through Teacher' Follow-up
Design and Preparation of First Instrument
Mail Out to Graduates
Bad Addresses
Returns
Non-Returns
Eliminated From Student Characteristics Tape
Design and Preparation of Second Instrument
Student Characteristics (Tape 1 of Supply Subsystem With Student Name and Address)
Mail Out to Non-Returnees
Return Data
Returns
Non-Returns
Preparation of Data Cards
Design and Preparation of Third Instrument
Teachers collect Data and Complete Data Cards
Mail Out to Non-Returnees
Returns Analyzed
Returns
Non-Returns
Teacher Follow-up Data
Sample Non-Returnees
Compare Sample With Return Data
Analyze Sample
Adjust Data if Necessary
Compare Two Follow-ups
Adjust Data if Necessary
Reports Made

Figure D-1. The Follow-up Subsystem



OCCUPATIONAL TRAINING INFORMATION SYSTEM

IN CO-OPERATION WITH
STATE DEPARTMENT OF VOCATIONAL -
TECHNICAL EDUCATION, AND ASSOCIATION
OF PRIVATE SCHOOLS

401 CLASSROOM BUILDING
STILLWATER, OKLAHOMA 74074

STILLWATER OKLAHOMA

NON-PROFIT
ORGANIZATION
1.6¢ PAID
PERMIT NO. 191

TO:

NOTICE: IF ADDRESS ON THIS ENVELOPE IS INCORRECT PLEASE
ADD CORRECT ADDRESS AND FORWARD CARD TO THE ADDRESSEE

[redacted]

↓ TO OPEN TEAR ALONG THIS PERFORATION
↓ USE THUMB NOTCH TO REMOVE CONTENTS

PATENT NO 3,104,799 OTHER PATENTS PENDING DATA-MAILER ®

UARCO BUSINESS FORMS - WATSEKA, ILL.

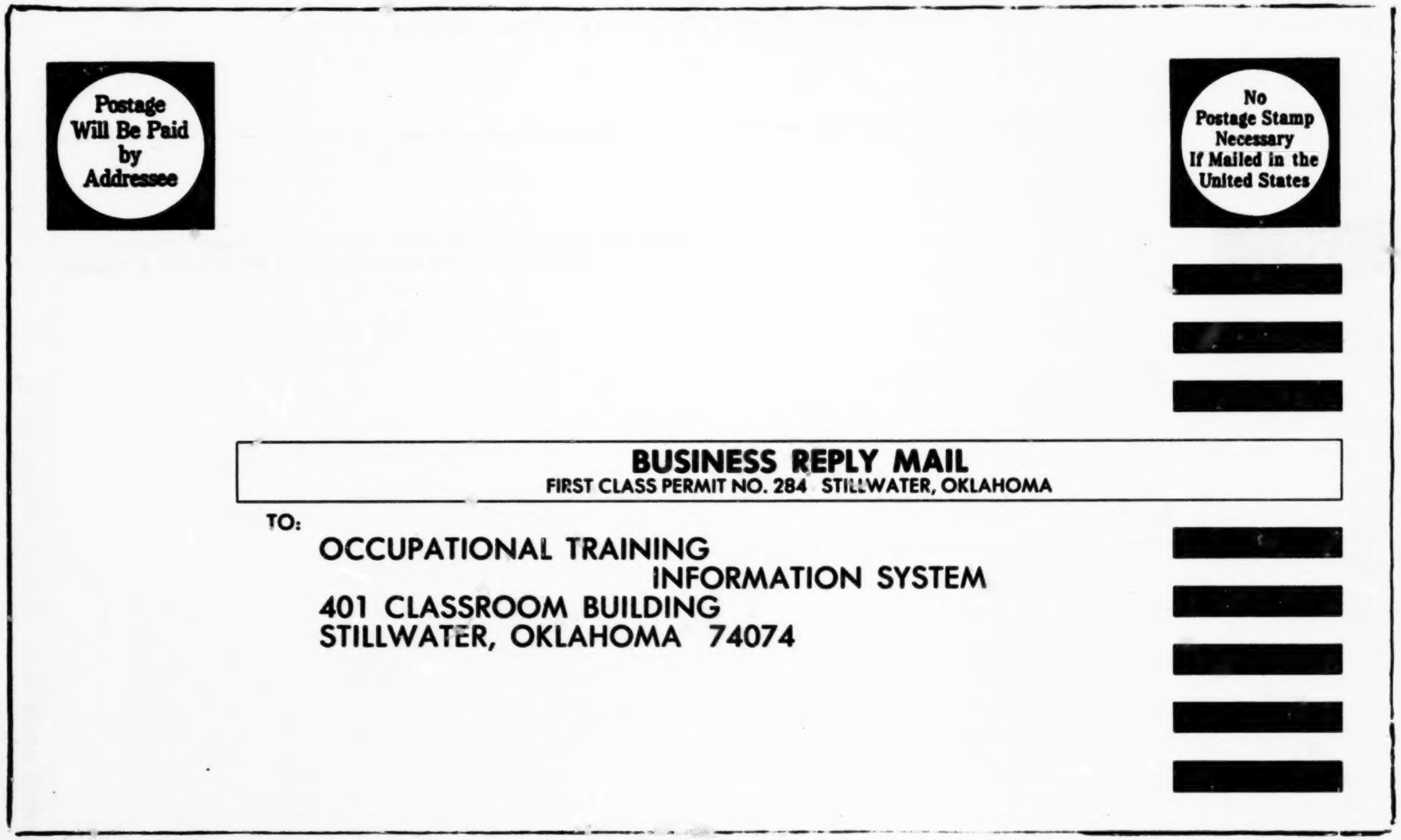
007028

007056

Figure D-2. First Follow-up Instrument
(Envelope)

- Continued on Next 2 Pages -

CONTINUED



Postage
Will Be Paid
by
Addressee

No
Postage Stamp
Necessary
If Mailed in the
United States

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 284 STILLWATER, OKLAHOMA

TO:
OCCUPATIONAL TRAINING
INFORMATION SYSTEM
401 CLASSROOM BUILDING
STILLWATER, OKLAHOMA 74074

Figure D-2. First Follow-up Instrument
(Return Card - Address Side)

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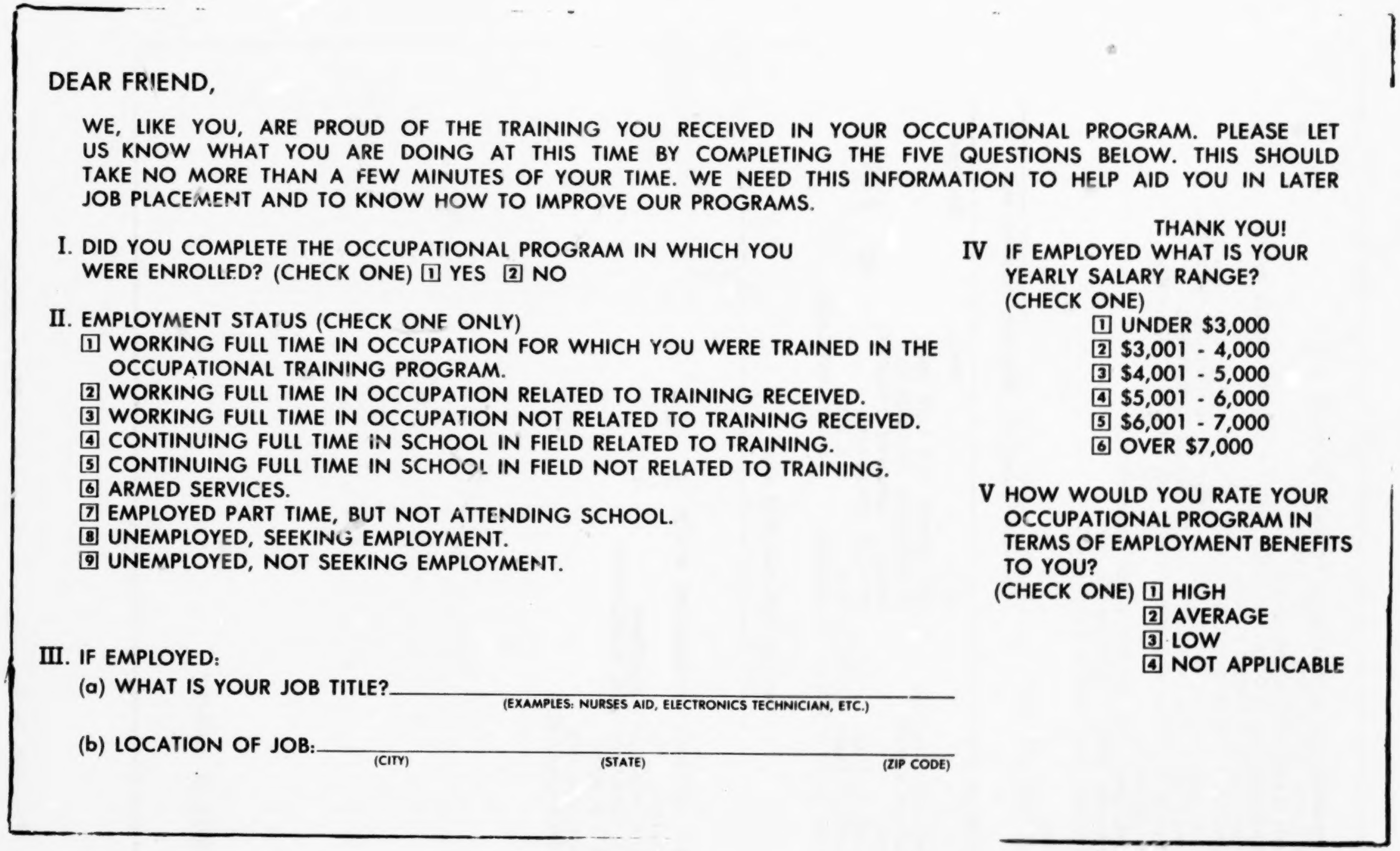


DEAR FRIEND,

WE, LIKE YOU, ARE PROUD OF THE TRAINING YOU RECEIVED IN YOUR OCCUPATIONAL PROGRAM. PLEASE LET US KNOW WHAT YOU ARE DOING AT THIS TIME BY COMPLETING THE FIVE QUESTIONS BELOW. THIS SHOULD TAKE NO MORE THAN A FEW MINUTES OF YOUR TIME. WE NEED THIS INFORMATION TO HELP AID YOU IN LATER JOB PLACEMENT AND TO KNOW HOW TO IMPROVE OUR PROGRAMS.

THANK YOU!

I. DID YOU COMPLETE THE OCCUPATIONAL PROGRAM IN WHICH YOU WERE ENROLLED? (CHECK ONE) 1 YES 2 NO

II. EMPLOYMENT STATUS (CHECK ONE ONLY)
1 WORKING FULL TIME IN OCCUPATION FOR WHICH YOU WERE TRAINED IN THE OCCUPATIONAL TRAINING PROGRAM.
2 WORKING FULL TIME IN OCCUPATION RELATED TO TRAINING RECEIVED.
3 WORKING FULL TIME IN OCCUPATION NOT RELATED TO TRAINING RECEIVED.
4 CONTINUING FULL TIME IN SCHOOL IN FIELD RELATED TO TRAINING.
5 CONTINUING FULL TIME IN SCHOOL IN FIELD NOT RELATED TO TRAINING.
6 ARMED SERVICES.
7 EMPLOYED PART TIME, BUT NOT ATTENDING SCHOOL.
8 UNEMPLOYED, SEEKING EMPLOYMENT.
9 UNEMPLOYED, NOT SEEKING EMPLOYMENT.

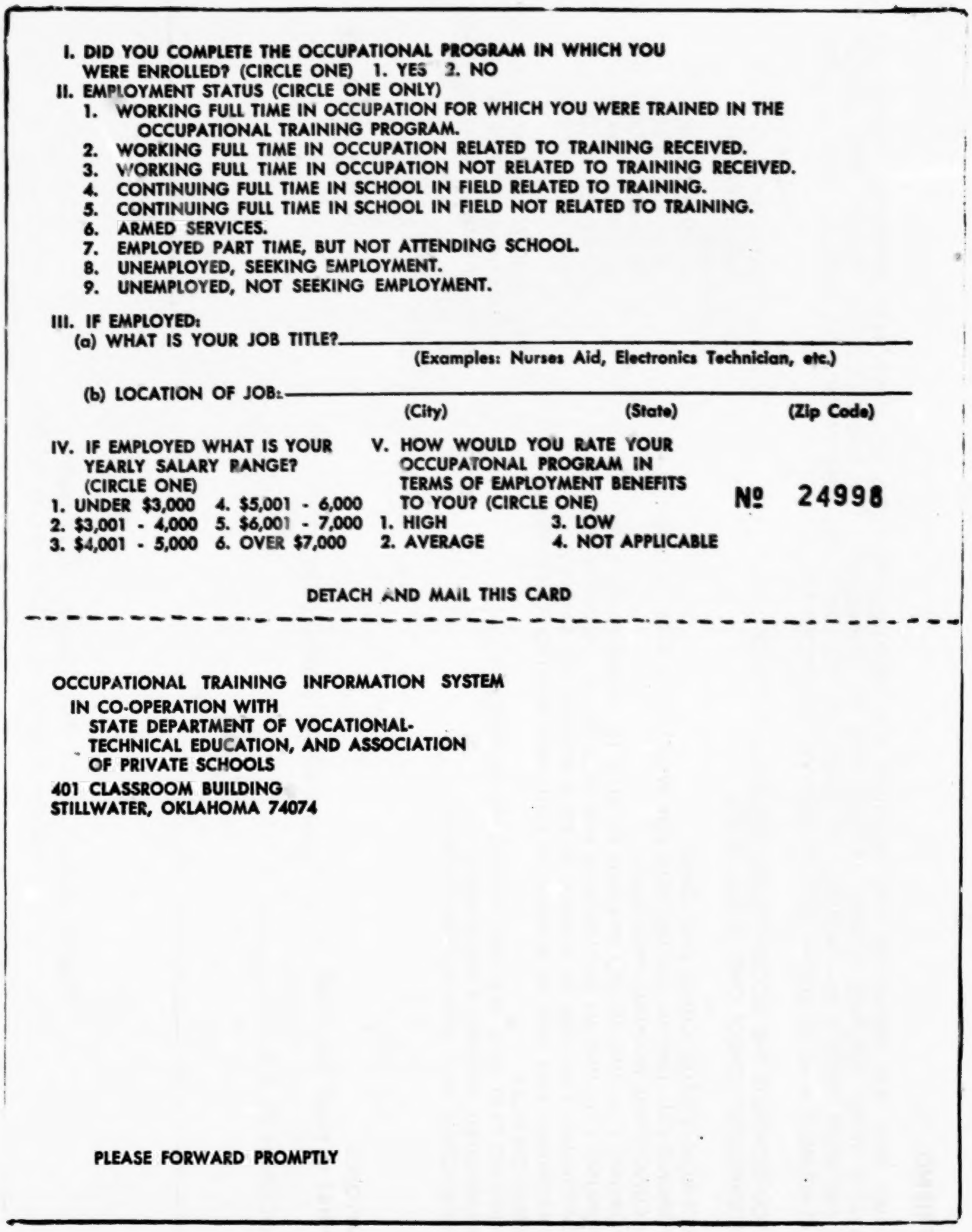
III. IF EMPLOYED:
(a) WHAT IS YOUR JOB TITLE?____________________
(EXAMPLES: NURSES AID, ELECTRONICS TECHNICIAN, ETC.)

(b) LOCATION OF JOB:____________________
(CITY) (STATE) (ZIP CODE)

IV IF EMPLOYED WHAT IS YOUR YEARLY SALARY RANGE?
(CHECK ONE)
1 UNDER $3,000
2 $3,001 - 4,000
3 $4,001 - 5,000
4 $5,001 - 6,000
5 $6,001 - 7,000
6 OVER $7,000

V HOW WOULD YOU RATE YOUR OCCUPATIONAL PROGRAM IN TERMS OF EMPLOYMENT BENEFITS TO YOU?
(CHECK ONE) 1 HIGH
2 AVERAGE
3 LOW
4 NOT APPLICABLE

Figure D-2. First Follow-up Instrument (Return Card - Information Side)



I. DID YOU COMPLETE THE OCCUPATIONAL PROGRAM IN WHICH YOU WERE ENROLLED? (CIRCLE ONE) 1. YES 2. NO

II. EMPLOYMENT STATUS (CIRCLE ONE ONLY)

1. WORKING FULL TIME IN OCCUPATION FOR WHICH YOU WERE TRAINED IN THE OCCUPATIONAL TRAINING PROGRAM.
2. WORKING FULL TIME IN OCCUPATION RELATED TO TRAINING RECEIVED.
3. WORKING FULL TIME IN OCCUPATION NOT RELATED TO TRAINING RECEIVED.
4. CONTINUING FULL TIME IN SCHOOL IN FIELD RELATED TO TRAINING.
5. CONTINUING FULL TIME IN SCHOOL IN FIELD NOT RELATED TO TRAINING.
6. ARMED SERVICES.
7. EMPLOYED PART TIME, BUT NOT ATTENDING SCHOOL.
8. UNEMPLOYED, SEEKING EMPLOYMENT.
9. UNEMPLOYED, NOT SEEKING EMPLOYMENT.

III. IF EMPLOYED:

(a) WHAT IS YOUR JOB TITLE?____________________
(Examples: Nurses Aid, Electronics Technician, etc.)

(b) LOCATION OF JOB:____________________
(City) (State) (Zip Code)

IV. IF EMPLOYED WHAT IS YOUR YEARLY SALARY RANGE? (CIRCLE ONE)

1. UNDER $3,000
2. $3,001 - 4,000
3. $4,001 - 5,000
4. $5,001 - 6,000
5. $6,001 - 7,000
6. OVER $7,000

V. HOW WOULD YOU RATE YOUR OCCUPATONAL PROGRAM IN TERMS OF EMPLOYMENT BENEFITS TO YOU? (CIRCLE ONE)

1. HIGH
2. AVERAGE
3. LOW
4. NOT APPLICABLE

Nº 24998

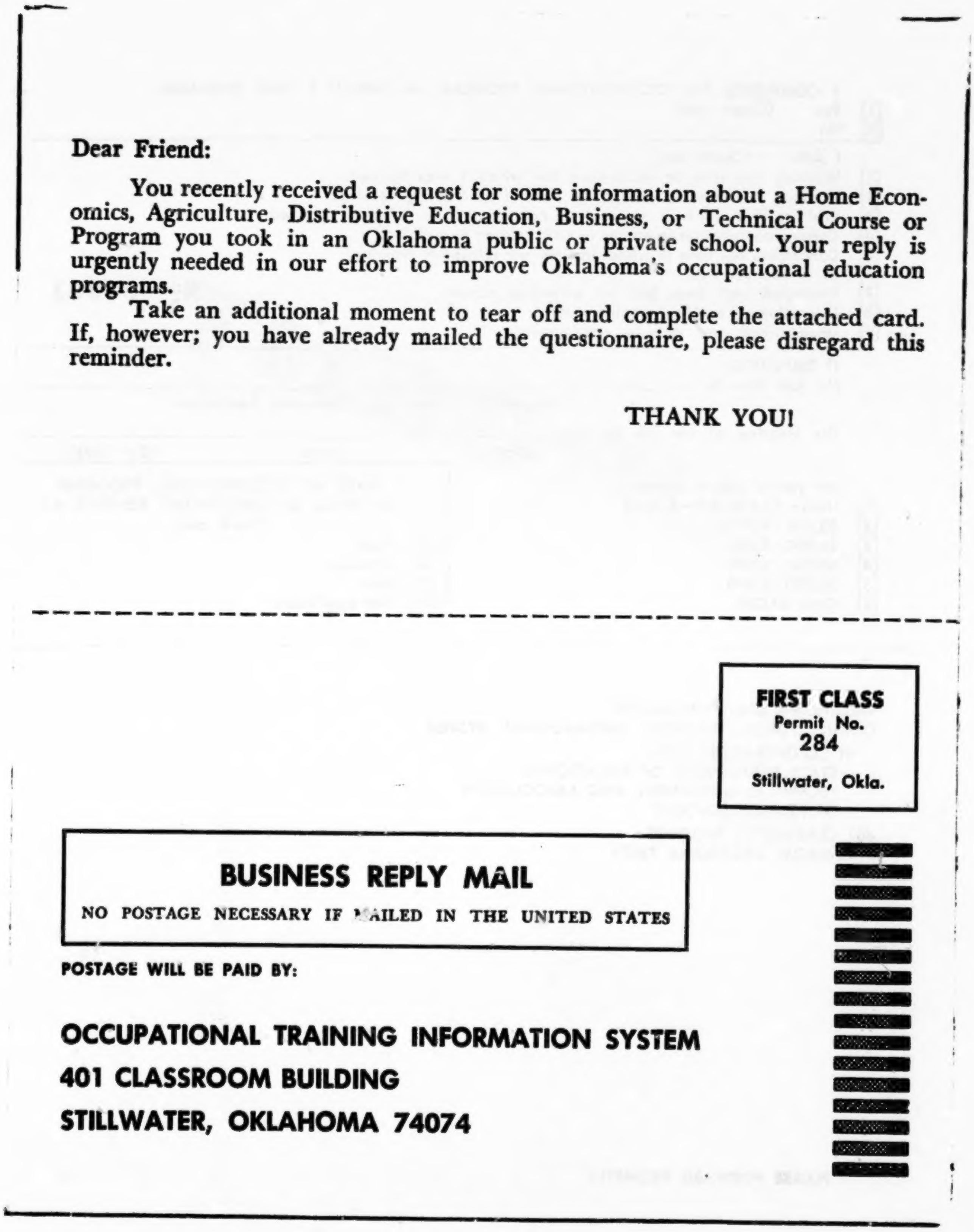
DETACH AND MAIL THIS CARD

OCCUPATIONAL TRAINING INFORMATION SYSTEM
IN CO-OPERATION WITH
STATE DEPARTMENT OF VOCATIONAL-
TECHNICAL EDUCATION, AND ASSOCIATION
OF PRIVATE SCHOOLS
401 CLASSROOM BUILDING
STILLWATER, OKLAHOMA 74074

PLEASE FORWARD PROMPTLY

Figure D-3. Second Follow-up Instrument (Return Card - Information Side and Cover Card - Address Side)

- Continued on Next Page -



Dear Friend:

You recently received a request for some information about a Home Economics, Agriculture, Distributive Education, Business, or Technical Course or Program you took in an Oklahoma public or private school. Your reply is urgently needed in our effort to improve Oklahoma's occupational education programs.

Take an additional moment to tear off and complete the attached card. If, however; you have already mailed the questionnaire, please disregard this reminder.

THANK YOU!

FIRST CLASS
Permit No.
284
Stillwater, Okla.

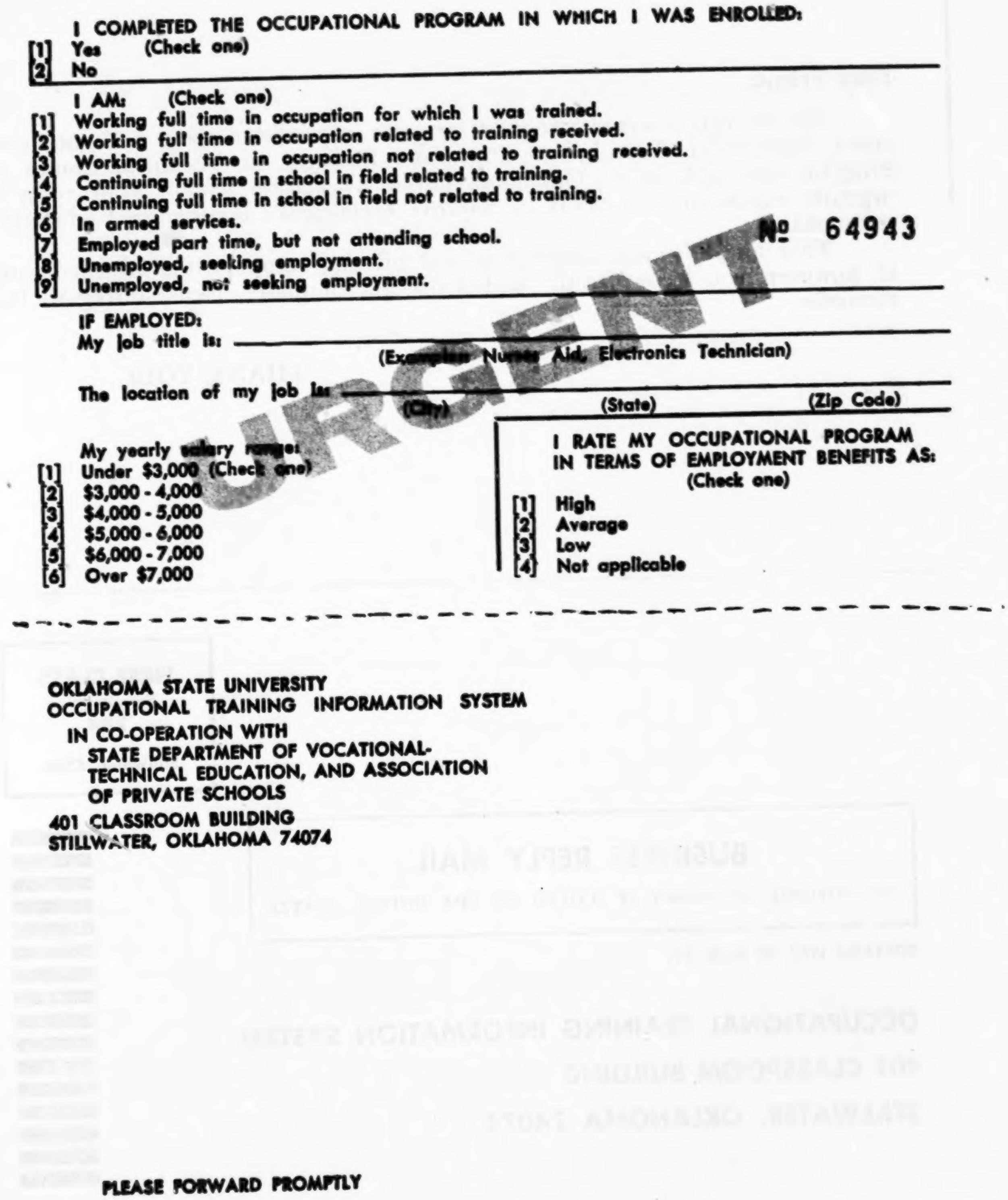
BUSINESS REPLY MAIL

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

POSTAGE WILL BE PAID BY:

OCCUPATIONAL TRAINING INFORMATION SYSTEM
401 CLASSROOM BUILDING
STILLWATER, OKLAHOMA 74074

Figure D-3. Second Follow-up Instrument (Return Card - Return Address Side and Cover Card - Introduction Side)



I COMPLETED THE OCCUPATIONAL PROGRAM IN WHICH I WAS ENROLLED:
[1] Yes (Check one)
[2] No

I AM: (Check one)
[1] Working full time in occupation for which I was trained.
[2] Working full time in occupation related to training received.
[3] Working full time in occupation not related to training received.
[4] Continuing full time in school in field related to training.
[5] Continuing full time in school in field not related to training.
[6] In armed services.
[7] Employed part time, but not attending school.
[8] Unemployed, seeking employment.
[9] Unemployed, not seeking employment.

Nº 64943

URGENT

IF EMPLOYED:
My job title is: ____________________
(Examples: Nurses Aid, Electronics Technician)

The location of my job is: ____________________
(City) (State) (Zip Code)

My yearly salary range: (Check one)
[1] Under $3,000
[2] $3,000 - 4,000
[3] $4,000 - 5,000
[4] $5,000 - 6,000
[5] $6,000 - 7,000
[6] Over $7,000

I RATE MY OCCUPATIONAL PROGRAM IN TERMS OF EMPLOYMENT BENEFITS AS: (Check one)
[1] High
[2] Average
[3] Low
[4] Not applicable

OKLAHOMA STATE UNIVERSITY
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PLEASE FORWARD PROMPTLY

Figure D-4. Third Follow-up Instrument (Return Card - Information Side and Cover Card - Address Side)

- Continued on Next Page -

Sock it to me Ronnie !

We just gotta know how you are doing and how you feel about the Office Educ program you were in.

Please help us improve that program by completing the attached card and hot footing it out to the mail box. Do it now and fill my Christmas stocking!

THANK YOU!

Paul

FIRST CLASS
Permit No.
284
Stillwater, Okla.

BUSINESS REPLY MAIL
NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

POSTAGE WILL BE PAID BY:

OKLAHOMA STATE UNIVERSITY
OCCUPATIONAL TRAINING INFORMATION SYSTEM
401 CLASSROOM BUILDING
STILLWATER, OKLAHOMA 74074

Figure D-4. Third Follow-up Instrument (Return Card - Return Address Side and Cover Card - Introduction Side)

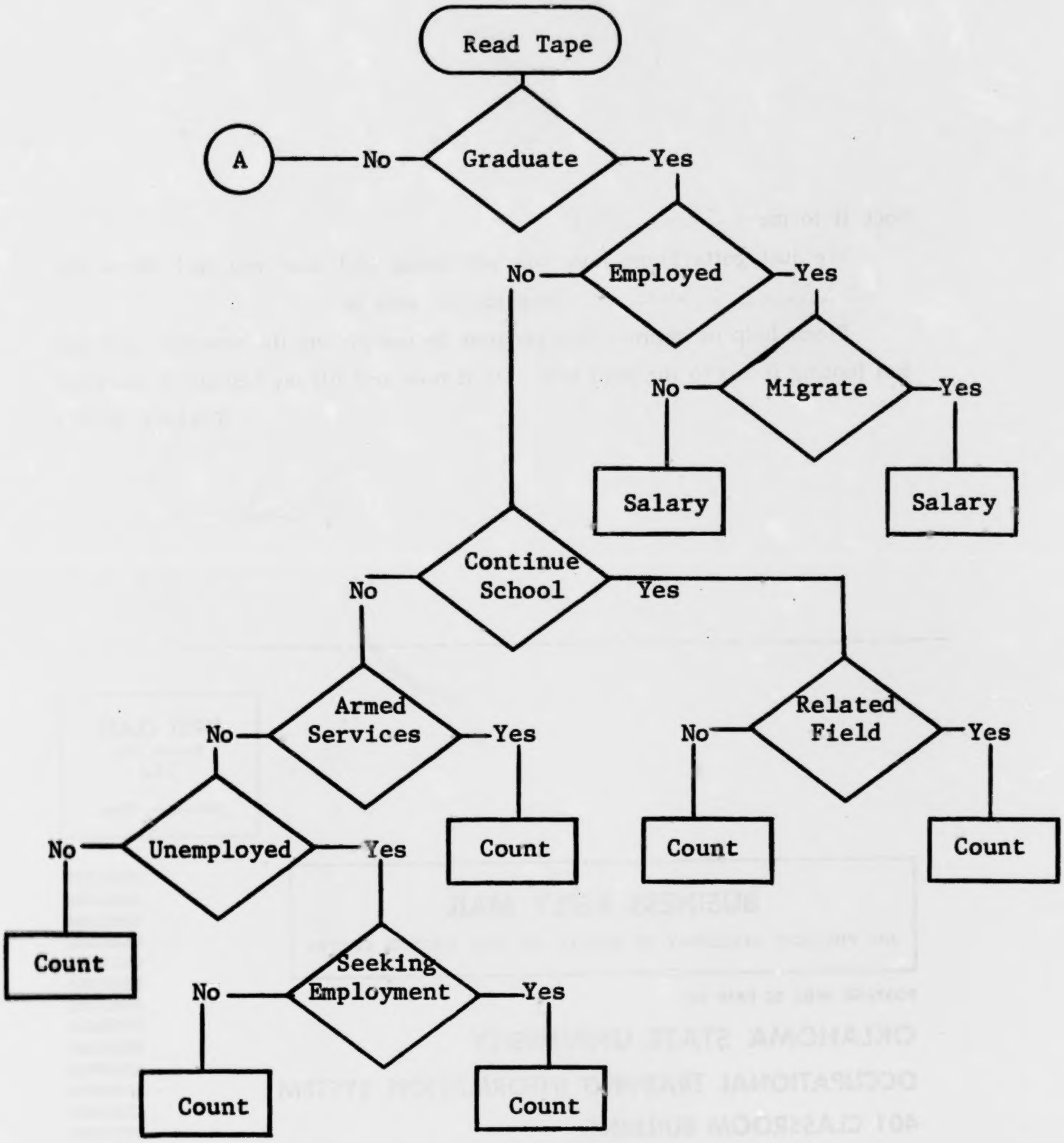

Read Tape
A
No
Graduate
Yes
No
Employed
Yes
No
Migrate
Yes
Salary
Salary
Continue School
No
Yes
Armed Services
No
Yes
Related Field
No
Yes
No
Unemployed
Yes
Count
Count
Count
Count
Seeking Employment
No
Yes
Count
Count

Figure D-5. Overview of Follow-Up Analysis (Continued on next page)

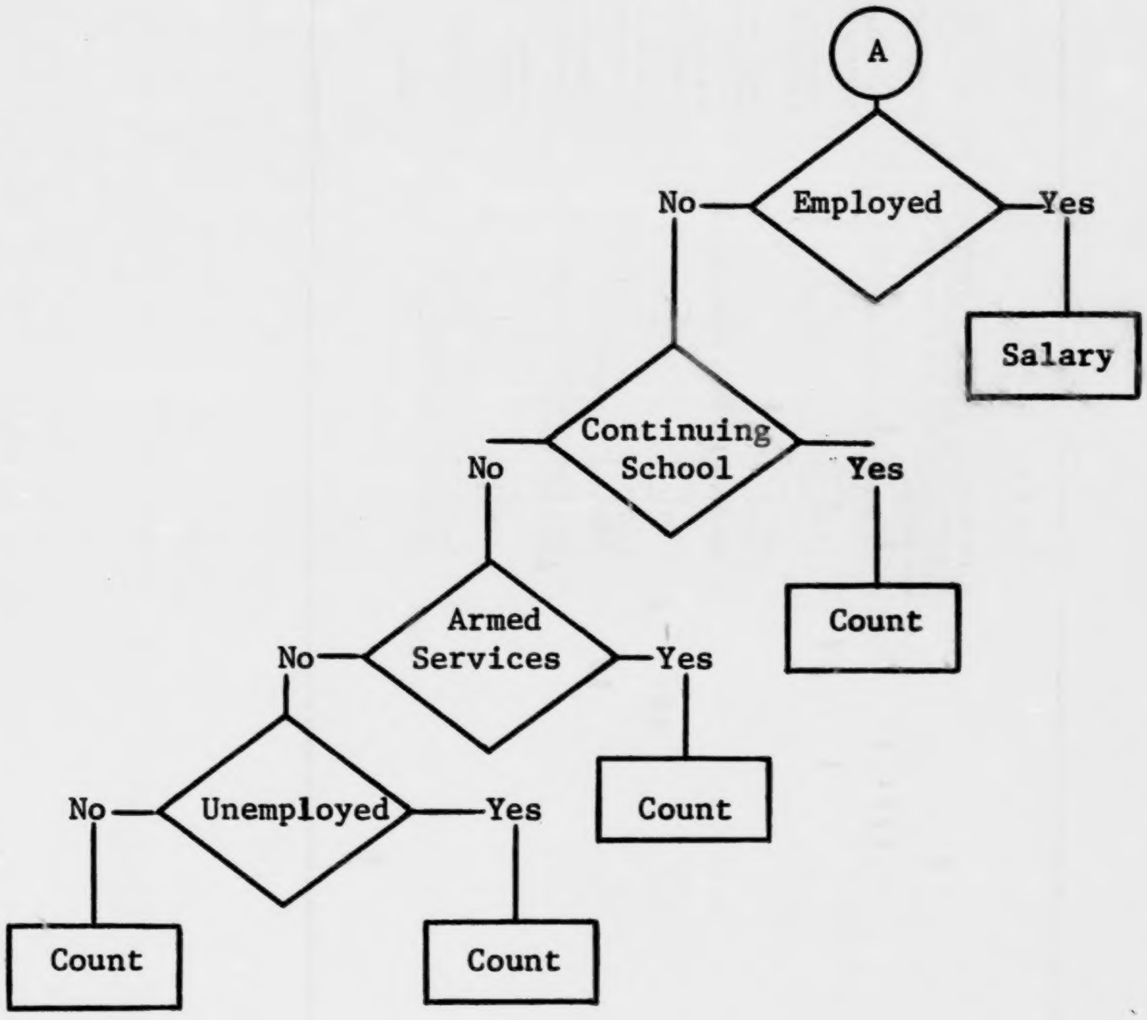
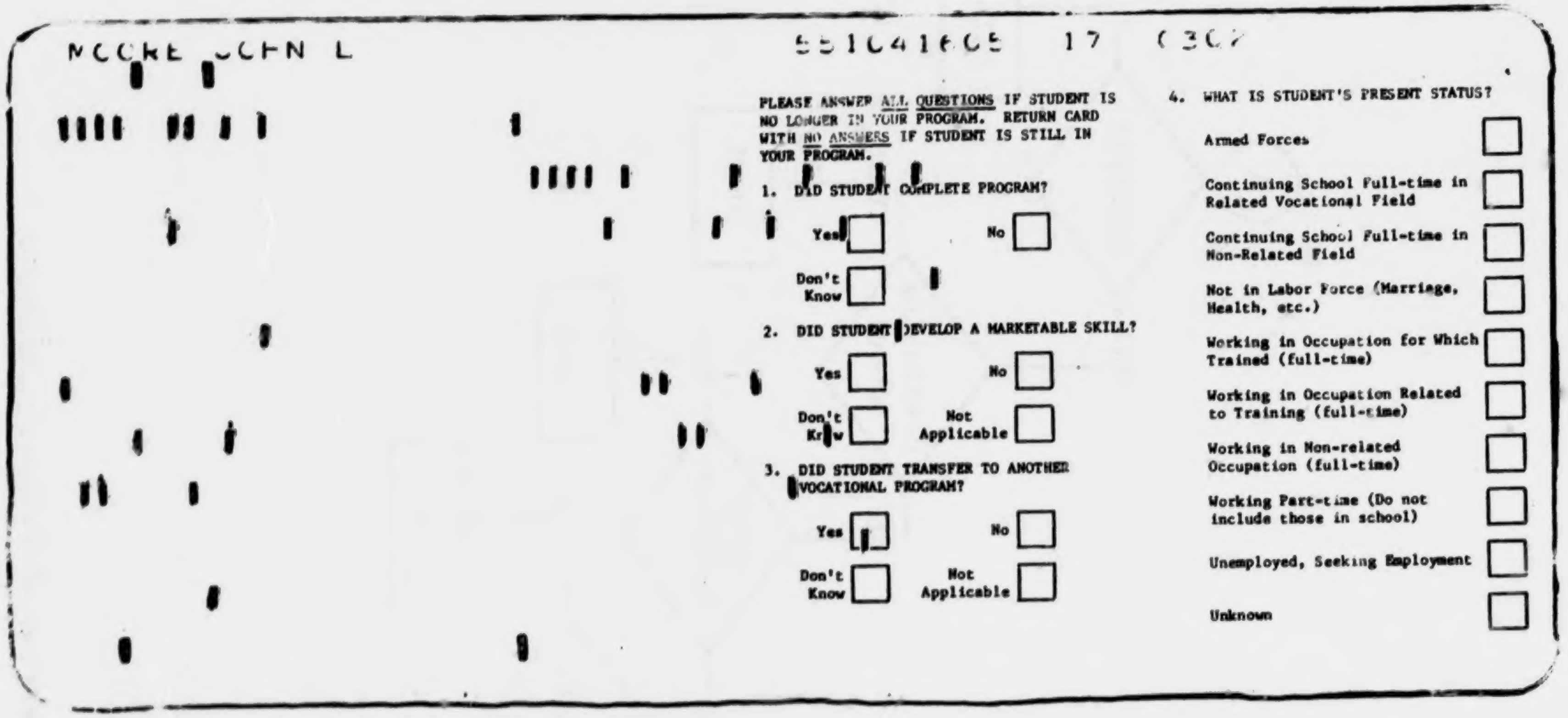

A
No
Employed
Yes
Salary
No
Continuing School
Yes
Count
No
Armed Services
Yes
Count
No
Unemployed
Yes
Count
Count

Figure D-5. Overview of Follow-Up Analysis



MOORE JOHN L 551041605 17 0307

PLEASE ANSWER ALL QUESTIONS IF STUDENT IS NO LONGER IN YOUR PROGRAM. RETURN CARD WITH NO ANSWERS IF STUDENT IS STILL IN YOUR PROGRAM.

1. DID STUDENT COMPLETE PROGRAM?

Yes ☐ No ☐
Don't Know ☐

2. DID STUDENT DEVELOP A MARKETABLE SKILL?

Yes ☐ No ☐
Don't Know ☐ Not Applicable ☐

3. DID STUDENT TRANSFER TO ANOTHER VOCATIONAL PROGRAM?

Yes ☐ No ☐
Don't Know ☐ Not Applicable ☐

4. WHAT IS STUDENT'S PRESENT STATUS?

Armed Forces ☐
Continuing School Full-time in Related Vocational Field ☐
Continuing School Full-time in Non-Related Field ☐
Not in Labor Force (Marriage, Health, etc.) ☐
Working in Occupation for Which Trained (full-time) ☐
Working in Occupation Related to Training (full-time) ☐
Working in Non-related Occupation (full-time) ☐
Working Part-time (Do not include those in school) ☐
Unemployed, Seeking Employment ☐
Unknown ☐

Figure D-6. Follow-up Data Card (Through Teachers)

ID or SS Number if Avail.	Name	Street and Number	City	State	Zip Code	School Code		
						Coty	Dist	Site
1 9	10 34	35 54	55 70	71 72	73 77	78 79	80 83	84 86

Program Code	Age	Sex	Married	Head of Household	Handicapped	Year in Program
87 92	93 94	95	96	97	98	99

Who Influenced	Reason for Enrolling	Previous Schooling	Doing Prior to Schooling	Prior Job	Stay in Oklahoma
100	101	102 103	104	105 106	107

Type of Student (Adult, etc.)	Race	Home Community Size	Father's Education Level	Father's Occupation	Income of Household
108	109	110	112 113	114 115	116

Number of Persons in Household	Complete Program?	Present Activity	Zip Code of Job	Salary	Benefit of Training
117 118	119	120	121 125	126	127

Figure D-7. Follow-up Tape

APPENDIX E

THE UNDERDEVELOPED HUMAN RESOURCES SUBSYSTEM

Objective

The objective of this subsystem is to gather names, addresses, phone numbers and related information on unemployed or underemployed manpower in Oklahoma in order to provide employment and/or training opportunities.

Procedure

A pilot study was initiated in the fall of 1969 to gather data on the unemployed or underemployed in metropolitan Tulsa and eight surrounding counties. An instrument (See Figure E-1) was developed by the Manpower Committee of the Tulsa Chamber of Commerce with the assistance of the OTIS staff, the Oklahoma Industrial Development and Park Department and the Oklahoma Department of Vocational and Technical Education.

Coordinators were selected for counties and communities who supervised the distribution of instruments through food markets and public agencies, e.g., the public schools (grades 1 through 4) sent forms home with children. Approximately 285,000 forms have been distributed with a return of 5,045 usable questionnaires. The percent distribution of respondents by race is presented in Table E-1.

At present, there is one plan under consideration for data utilization (See Figure E-2). The utilization of data will involve both agencies as a main thrust and a direct approach, depending upon the background of the individual. Both alternatives will utilize Theodore Ingram and the OTIS staff for analysis and dissemination of data.

TABLE E-1

PERCENT DISTRIBUTION OF RESPONDENTS BY RACE

RACE	NUMBER	PERCENT
White	4,188	83.1
Negro	580	11.5
American Indian	189	3.7
Mexican American	15	0.3
Oriental	11	0.2
No Response to Question	62	1.2
Totals	5,045	100.0

The data were coded and keypunched as outlined in Figure E-3. The data will then be compiled on computer tape and reports will be available relative to any characteristics which have been coded, e.g., underemployed; unemployed without training; and, unemployed and desiring training.

The data is now keypunched and preliminary analysis is now under way. A summary of the basic characteristics of respondents to the underdeveloped human resources pilot project is presented in Table E-2.

TABLE E-2

CHARACTERISTICS OF THE RESPONDENTS TO THE UNDERDEVELOPED HUMAN RESOURCES PILOT PROJECT

N = 5,045

SEX	Male	55%
	Female	44%
	No Response to Item	1.1%
AGE	16-21 years	32.8%
	22-30 years	15.3%
	31-40 years	28.8%
	41-50 years	15.8%
	51 and over	5.5%
	No Response to Item	1.8%

TABLE E-2 (CONTINUED)

CHARACTERISTICS OF THE RESPONDENTS TO THE UNDER-DEVELOPED HUMAN RESOURCES PILOT PROJECT

N = 5,045

RACIAL & ETHNIC GROUP	White	83%
	Negro	11.5%
	American Indian	3.7%
	Mexican American	0.3%
	Oriental	0.2%
	No Response to Item	1.2%
MARITAL STATUS	Married	55.9%
	Single	35.2%
	Divorced	5.1%
	Separated	2.2%
	Widowed	0.0%
	No Response to Item	1.6%
INCOME	Less than $30/week	27.6%
	$30-$50/week	10.1%
	$50-$75/week	8.6%
	$75/week +	34.5%
	No Response to Item	19.1%
SOURCE OF INCOME	Public Assistance	3.8%
	Wages	56.7%
	Social Security	3.5%
	Other	22.3%
	No Response to Item	13.8%
SCHOOL GRADE ACHIEVEMENT	8th Grade or less	6.5%
	9th-11th Grade	40.5%
	12th Grade	38.5%
	No Response to Item	14.5%
POST-HIGH SCHOOL	1 year of college	4.3%
	2 years of college	4.0%
	3 years of college	1.2%
	4 years of college	6.3%
	Other	8.6%
	No College	75.6%
EMPLOYMENT STATUS	Full-Time	40.7%
	Part-Time	17.1%
	Unemployed	38.0%
	No Response to Item	4.2%

LABOR AVAILABILITY SURVEY

RETURN TO
MANPOWER DEVELOPMENT
616 SOUTH BOSTON
TULSA, OKLAHOMA 74119

NAME ______________________ SOCIAL SECURITY NO. ______________

MAILING ADDRESS: ____________________________________
(Street) (Town) (County) (Zip)

PHONE ______________________ DATE ______________________

1. AGE GROUP: (Circle one)
   - I am from 16 to 21 years old ...1
   - I am from 22 to 30 years old ...2
   - I am from 31 to 40 years old ...3
   - I am from 41 to 50 years old ...4
   - I am from 51 to 60 years old ...5
   - I am 61 years old or older ...6

2. SEX: (Circle one)
   I am: male 1
   female 2

3. MARITAL STATUS: (Circle one)
   I am: married 1
   single 2
   divorced 3
   separated 4

4. RACE: (Circle one)
   I am: Afro-American 1
   American Indian 2
   Mexican American 3
   White 4
   Oriental 5

5. NUMBER OF DEPENDENTS: (Circle one)
   1 2 3 4 5 6 or more

6. EDUCATION: (Circle last year completed)
   (a) 1 2 3 4 5 6
   7 8 9 10 11 12
   COLLEGE
   1 2 3 4 OTHER__________
   (b) When did you last attend school ______________
   year

7. I have job training:
   Yes 1 No 2
   If yes, what type of training
   (For example: Typist, Machinist)
   ____
   ____
   year completed

8. I will take job training to qualify for a job:
   Yes 1 No 2

9. EMPLOYMENT STATUS: (Circle one)
   Employed Full-time 1
   Part-time 2
   Unemployed 3

10. I have work experience in an industrial plant
    Yes 1 No 2

11. I have machine operation experience in a manufacturing plant. Yes 1 No 2

12. INCOME: (Circle one)
    I receive:
    less than $30 per week ... 1
    from $30 to $50 per week . 2
    from $50 to $75 per week . 3
    more than $75 per week ... 4

13. MAJOR SOURCE OF INCOME: (Circle one)
    Wages 1
    Social Security 2
    Public Assistance 3
    Other 4

Figure E-1. Underdeveloped Human Resources Questionnaire
(Continued on next page)

Figure E-1. (Continued)

14. Circle the maximum number of miles you would travel to work:
5 10 15 20 25 30 35
40 45 50

15. Do you have personal transportation: (Circle one)
Yes 1 No 2 (Car less than 6 years old)

16. I prefer to work during: (Circle one)
The day 1
The evening 2
The night 3
No preference 4

17. I am eligible for the draft now or will be in the near future: Yes 1 No 2

18. Type of job I am interested in:

____

____

____

____

____

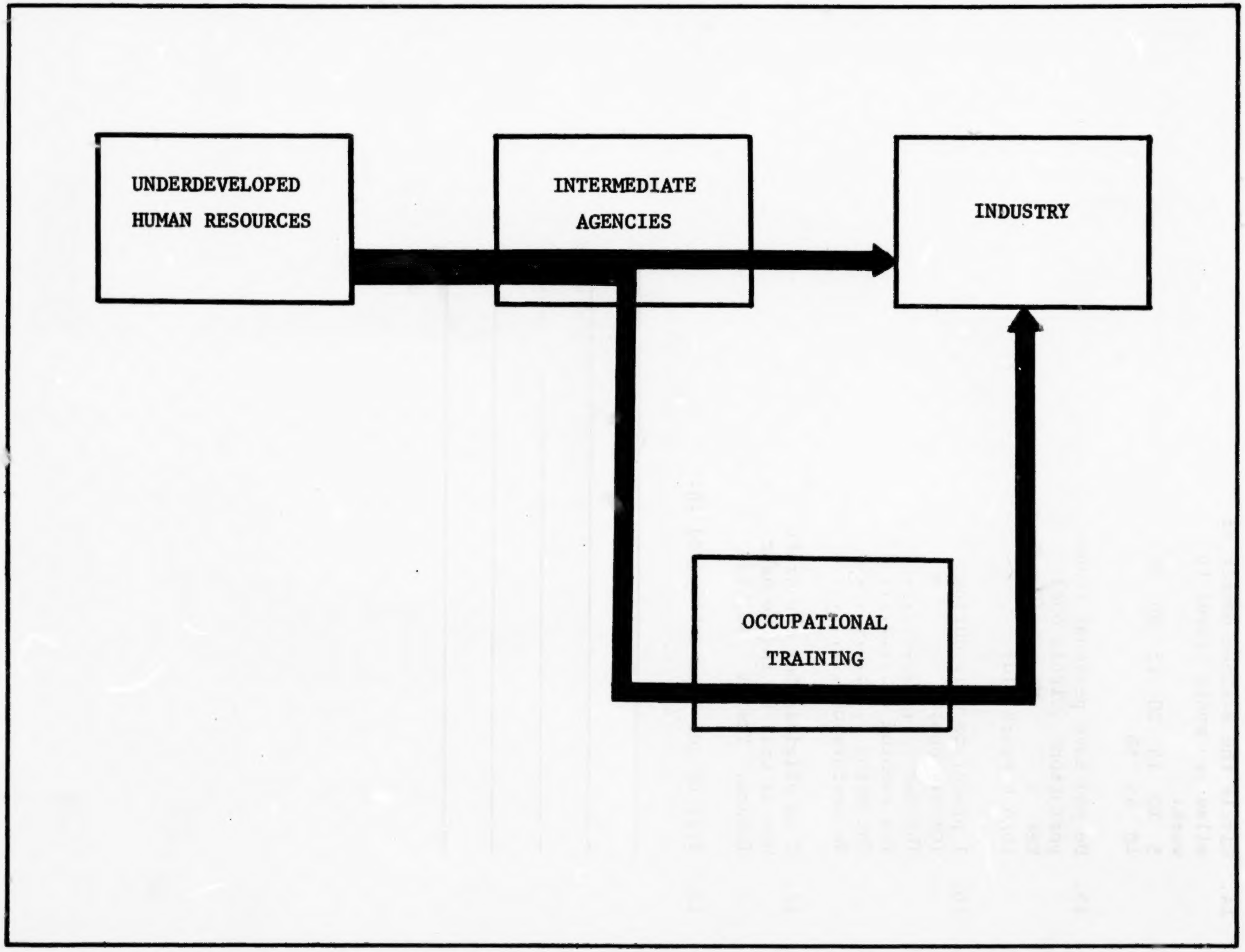

UNDERDEVELOPED HUMAN RESOURCES
INTERMEDIATE AGENCIES
INDUSTRY
OCCUPATIONAL TRAINING

Figure E-2. Strategy for Underdeveloped Human Resources Subsystem.

LABOR AVAILABILITY SURVEY

INSTRUCTIONS FOR KEYPUNCHING

Figure E-3.

nitial Column	Final Column	No. of Columns	ITEM	
			Card 1	
1	9		Social Security Number	
10	24		First Name	
25	25		Middle Initial	
26	40		Last Name	
41	60		Street Number and Name	
61	62		County	Code
			Adair	01
			Alfalfa	02
			Atoka	03
			Beaver	04
			Beckham	05
			Blaine	06
			Bryan	07
			Caddo	08
			Canadian	09
			Carter	10
			Cherokee	11
			Choctaw	12

INSTRUCTIONS FOR KEYPUNCHING

(Continued)

Initial Column	Final Column	No. of Columns	ITEM	
61	62		County	Code
			Cimarron	13
			Cleveland	14
			Coal	15
			Comanche	16
			Cotton	17
			Craig	18
			Creek	19
			Custer	20
			Delaware	21
			Dewey	22
			Ellis	23
			Garfield	24
			Garvin	25
			Grady	26
			Grant	27
			Greer	28
			Harmon	29
			Harper	30
			Haskell	31
			Hughes	32
			Jackson	33
			Jefferson	34

INSTRUCTIONS FOR KEYPUNCHING

(Continued)

Intial Column	Final Column	No. of Columns	ITEM	
61	62		County	Code
			Johnston	35
			Kay	36
			Kingfisher	37
			Kiowa	38
			Latimer	39
			LeFlore	40
			Lincoln	41
			Logan	42
			Love	43
			McClain	44
			McCurtain	45
			McIntosh	46
			Major	47
			Marshall	48
			Mayes	49
			Murray	50
			Muskogee	51
			Noble	52
			Nowata	53
			Okfuskee	54

INSTRUCTIONS FOR KEYPUNCHING

(Continued)

Intial Column	Final Column	No. of Columns	ITEM	
61	62		County	Code
			Oklahoma	55
			Okmulgee	56
			Osage	57
			Ottawa	58
			Pawnee	59
			Payne	60
			Pittsburg	61
			Pontotoc	62
			Pottawatomie	63
			Pushmataha	64
			Roger Mills	65
			Rogers	66
			Seminole	67
			Sequoyah	68
			Stephens	69
			Texas	70
			Tillman	71
			Tulsa	72
			Wagoner	73
			Washington	74
			Washita	75
			Woods	76
			Woodward	77

INSTRUCTIONS FOR KEYPUNCHING

(Continued)

Intial Column	Final Column	No. of Columns	ITEM
63	67		Zip Code
68	77		Phone Number (First three digits for Area Code)
78	79		(Blank)
80	80		Card Number - 1
			Card 2
1	9		Social Security Number
10	15		Date
16	16		Age Group
			16 - 21 1
			22 - 30 2
			31 - 40 3
			41 - 50 4
			51 - 60 5
			61 or older 6
			No response 9
17	17		Sex
			Male 1
			Female 2
			No response 9
18	18		Marital Status
			Married 1
			Single 2

INSTRUCTIONS FOR KEYPUNCHING

(Continued)

Intial Column	Final Column	No. of Columns	ITEM	
			Marital Status	
			Divorced	3
			Separated	4
			Widowed	5
			No response	9
19	19		Race	
			Afro.-American	1
			American Indian	2
			Mexican American	3
			White	4
			Oriental	5
			No response	9
20	20		No. of Dependents	
			1	1
			2	2
			3	3
			4	4
			5	5
			6 or more	6
			No response	9
21	22		Education	
			(a) 1	01
			2	02

INSTRUCTIONS FOR KEYPUNCHING

(Continued)

Intial Column	Final Column	No. of Columns	ITEM	
			Education	
			3	03
			4	04
			5	05
			6	06
			7	07
			8	08
			9	09
			10	10
			11	11
			12	12
			No response	99
23	23		(b) College	
			1	1
			2	2
			3	3
			4	4
			Other	5
			No response	9
24	25		Year last attended school	
			(Keypunch last two numbers:	
			for example, if the year is	
			1969, keypunch 69, if no	

INSTRUCTIONS FOR KEYPUNCHING

(Continued)

Intial Column	Final Column	No. of Columns	ITEM	
			answer is there,	
			keypunch 99.)	
26	26		Job Training	
			Yes	1
			No	2
			No response	9
27	28		Type of Training	
			(consider only the first type)	
			Agriculture	01
			Distribution &	
			Marketing	02
			Health	03
			Home Economics	04
			Office	05
			Technical	06
			Trades & Industry	07
			Professional	08
			Other	09
			No response	99
29	29		Will take job training	
			Yes	1
			No	2

INSTRUCTIONS FOR KEYPUNCHING

(Continued)

Intial Column	Final Column	No. of Columns	ITEM	
			Will take job training	
			No response	9
30	30		Employment Status	
			Employed full-time	1
			Employed part-time	2
			Unemployed	3
			No response	9
31	31		Experience in industrial plant	
			Yes	1
			No	2
			No response	9
32	32		Machine operation experience in a manufacturing plant	
			Yes	1
			No	2
			No response	9
33	33		Income	
			Less than $30/wk.	1
			$30 - $50/wk.	2
			$50 - $75/wk.	3
			More than $75/wk.	4
			No response	9

INSTRUCTIONS FOR KEYPUNCHING
(Continued)

Intial Column	Final Column	No. of Columns	ITEM
34	34		Major source of income
			Wages 1
			Social Security 2
			Public Assistance 3
			Other 4
			No response 9
35	36		Max. no. of miles you would travel to work
			5 05
			10 10
			15 15
			20 20
			25 25
			30 30
			35 35
			40 40
			45 45
			50 50
			No response 99
37	37		Personal Transportation
			Yes 1
			No 2
			No response 9

INSTRUCTIONS FOR KEYPUNCHING

(Continued)

Intial Column	Final Column	No. of Columns	ITEM
38	38		When prefer to work
			the day 1
			the evening 2
			the night 3
			no preference 4
			no response 9
39	39		Eligible for the draft
			yes 1
			No 2
			no response 9
40	79		Blank
80	80		Card number 2

APPENDIX F

DOCUMENTATION OF THE SOCIO-POLITICAL SUBSYSTEM

Objective

The objective of this subsystem was to establish among relevant agencies at the various levels of government and industry the socio-political involvements, commitments, and interdependencies that were essential to the operation, implementation, and utilization of OTIS.

Procedure

The subsystem involved in the socio-political subsystem are:

a. Involvement - Involvements were initiated with the establishment of the OTIS Advisory Committee in the spring of 1969 after the final funding of the project. A complete list of the sponsoring and cooperating agencies with names of their representatives on the OTIS Advisory Committee can be seen at pp. iii-iv-v.

b. Commitment - Every effort has been made to establish commitment from all relevant agencies based on their active involvement and specific contribution of staff time, facilities, and financial support. The basic financial support was provided by power Administration of the U. S. Department of Labor, the State Department of Vocational and Technical Education, the Oklahoma Industrial Development and Park Department, the Ozarks Regional Commission, and the Research Foundation at Oklahoma State University. Other agencies involved included the Oklahoma Employment Security Commission; the Oklahoma Association of Private Schools; the Manpower Research and Training Center, the School of Occupational and Adult Education, Oklahoma State University, and the Research Coordinating Unit, Oklahoma State Department of Vocational and Technical Education.

Employment Security Commission has been providing valuable support in all phases of this project. It has already committed similar support to the continuation of the system. Plans are underway to conduct an in-depth manpower demand survey in health services under their direction. A long range plan to continue assistance in collecting demand data by OESC is also under consideration.

Employing organizations in Oklahoma also made their commitment through cooperation in the demand surveys such as one conducted during June-August 1969. The level of their cooperation has been excellent. Their representatives on the Advisory Committee have helped to establish a close contact between the employers and the training officials in schools.

c. Interdependence - Efforts have been made to establish the following interdependence of the agencies involved.

   1. Each agency made the contribution that it projected as significant.

   2. Contribution of each agency was recognized as essential to the successful achievement of Oklahoma's economic development strategy and subsumed goals for vocational and technical training and

   3. By emphasis that no one agency could successfully implement all the actions necessary to achieving established goals.

It should be emphasized that the OTIS project is primarily an information gathering system to be used as a tool for decision making. The following is a list of the decision makers for OTIS:

A. Federal agencies providing major financial support for vocational education and research. This group is primarily represented by CAMPS.

B. Governor and Legislators. Governor Bartlett and legislative committees concerned with economic development and education.

C. Advisory Committee.

D. Commissions and Directors of State agencies and boards of vocational education institutions. There are approximately 250 school boards with occupational programs. Some of the state agencies are:

Division of Economic Opportunity
Office of the Governor

Adult Basic Education Division
State Department of Education

Work and Training Unit
State Department of Public Welfare

Vocational Rehabilitation Division
State Department of Education

Oklahoma CAP Directors Association

Bureau of Indian Affairs
(Anadarko and Muskogee Offices)

Governor's Commission on Full
Employment, Office of the Governor

Interagency Board of U. S. Civil
Service Examiners

Environmental Health Services
State Department of Health

Farmers' Home Administration

E. Directors of 424 specific vocational and technical training institutions.

F. Supervisors of statewide training programs. There are seven "public" supervisors.

G. Department Heads within vocational and technical training institutions. There are approximately 150 department heads.

H. Instructors of specific programs. There are approximately 5,000 instructors.

I. Directors of Economic Development Districts in Oklahoma. There are five districts.

REPORTS AND ASSOCIATED DECISION MAKERS

1. Interfacing of Manpower Demand and Supply Report	State Board of Vocational and Technical Education State Department of Vocational and Technical Education Local School Boards Local School Administrators Oklahoma Employment Security Commission Oklahoma Industrial Development and Park Department Selected Private Schools State Health Planning Agency Oklahoma Research Coordinating Unit Ozarks Regional Commission Secretariate of CAMPS
2. Manpower Demand Reports	
a. By Job, by Business Establishment, by County Report This report has the following categories: (1) Total employment in 1969 (2) On-job-training in 1969 (3) Jobs available in 1969 (4) New jobs available in 1970 (5) Replacement jobs available in 1970 (6) New jobs available in 1971 (7) Replacement jobs available in 1971	State Department of Vocational and Technical Education Oklahoma Employment Security Commission Oklahoma Industrial Development and Park Department Selected Local Administrators Selected Chambers of Commerce Oklahoma Research Coordinating Unit Secretariate of CAMPS
b. Summary of Total Employment by Job, by DOT Code, by County, and by Region	Oklahoma Employment Security Commission State Department of Vocational and Technical Education

b. Continued	Industrial Development and Park Department Selected Local Administrators Selected Chambers of Commerce Secretariate of CAMPS
c. Summary of On-Job-Training in 1969 by Job, by DOT Code, by County, by Region	State Department of Vocational and Technical Education Secretariate of CAMPS (Also used internally)
d. Summary of Jobs Available in 1969 by Job, by DOT Code, by County, and by Region	Oklahoma Employment Security Commission State Department of Vocational and Technical Education Secretariate of CAMPS
e. Summary of New Jobs Available in 1970 by Job, by DOT Code, by County, and by Region	State Department of Vocational and Technical Education Oklahoma Employment Security Commission Selected Local School Administrators Secretariate of CAMPS
f. Summary of Replacement Jobs Available in 1970 by Job, by County, and by Region	State Department of Vocational and Technical Education Selected Local School Administrators Secretariate of CAMPS
g. Summary of New Jobs Available in 1971 by Job, by DOT Code, by County, and by Region	State Department of Vocational and Technical Education Oklahoma Employment Security Commission Secretariate of CAMPS
h. Summary of Replacement Jobs in 1971 by Job, by DOT Code, by County, and by Region	State Department of Vocational and Technical Education Secretariate of CAMPS
3. Data for Office of Education Reports	
a. OE Form 40-45 (Enrollment)	State Department of Vocational and Technical Education
b. OE Form 4048 (Fall)	State Department of Vocational and Technical Education
c. OE Form 4048	State Department of Vocational and Technical Education

4. Underdeveloped Human Resources Report	Industrial Development and Park Department State Department of Vocational and Technical Education CEP CAP Local School Administrators Ozarks Regional Commission Secretariate of CAMPS
5. Student Characteristics Reports	
a. Disadvantaged Students Report	State Department of Vocational and Technical Education Private Schools
b. Mobility Patterns Report	State Department of Vocational and Technical Education Oklahoma Employment Security Commission Private Schools Industrial Development and Park Department

APPENDIX G

INDUSTRIES COOPERATING IN SPECIAL SCHOOLS FOR INDUSTRIAL TRAINING PROGRAMS DURING THE 1969-70 SCHOOL YEAR

COMPANY	CITY	NUMBER TRAINED	TRAINING PROGRAM
American Trailer Co.	Okla. City	16	Supervisory Development Training
Chandler Expanded Metals	Chandler	16	Operator Training
		8	Spot Welders & Press Opr.
Charles Machine Works	Perry	20	Blueprint Reading and Math
Congoleum	Wilburton	54	Finishing
		142	Tufting
		42	Dying
		16	Examining
Crown Mfg. Company	Miami	6	Vacuum Laminating
		11	Final Assembly
		7	Finishing
		8	Rough Mill
		12	Finish Mill
Dalton Precision	Cushing	25	Machine Operators
Danuser Machine Works	Claremore	38	Blueprint Reading, Math & Measuring Tools
Duncan Area School for: DX Sunray, Haliburton, Printing Co., Pump Co., Duncan City Admin., & Comanche City Admin.	Duncan	20	Supervisory Development Training
Elk City Mfg. Co.	Elk City	125	Power Sewing Mach. Opr.
Hale Trailer	Durant	15	Welders
J. A. Runge	Seminole	6	Screw Machine Operator
		14	Chrome Plane Line Opr.
		4	Die Setter Training
		25	Spot Welder Training
Marcus Mfg. Co.	Nowata	42	Power Sewing Mach. Opr.
Muskogee Special School for Several Indiv. Cos.	Muskogee	17	Machine Shop
		10	Machine Shop
		20	Welding

COMPANY	CITY	NUMBER TRAINED	TRAINING PROGRAM
Pawhuska Mfg. Co.	Pawhuska	48	Power Sewing Mach. Opr.
Phillips Products	Pryor	22	Basic Electricity
United Clay Pipe Co.	Seminole	7	Equipment Operator
		6	Kiln Fireman
		12	Hoist & Pipe Clamp Oprs.
		20	Pipe Jointers
U. S. Carpet	Bristow	8	Carpet Industry Training
WABCO	Enid	22	Basic Machine Shop (Blueprint reading, math & Measuring tools)
Wells Lamont	Hugo	30	Power Sewing Mach. Opr.

APPENDIX H

OCCUPATIONS FOR WHICH SOME DEMAND WAS INDICATED IN A 1969 OTIS DEMAND SURVEY WHICH ARE NOT PRESENTLY INTERFACED WITH SUPPLY

D.O.T. Code	Job Title
010.281	Well Logging Technician
024.387	Laboratory Assistant
029.181	Laboratory Technician
029.381	Laboratory Tester 2
078.368	Prothetist
199.281	Tester Food Products
363.885	Pressing Machine Operator
389.887	Exterminator
424.883	Heavy Equipment Operator
502.381	Molder or Caster
503.885	Galvanizer or Degreaser
503.887	Sand Blaster
504.885	Charger
505.884	Metal Sprayer
505.885	Vacuum-Metalizer Operator
512.782	Cupola Tender
512.885	Furnace Tender
518.885	Shell Molder (Controller)
520.885	Mixer-and-Blender (Pelletmill Operator)
521.885	Meat Processor (Machine)
524.885	Decorator
526.782	Cook
529.132	Plant Foreman
529.381	Cheesemaker or Candymaker
529.782	Ice Cream Maker
529.885	Ice Cream Maker Helper
529.887	Hanger, Distillery Worker, or Press Operator
530.885	Pulper Operator
534.782	Back Tender
540.782	Oil Blender
542.782	Charcoal Burner
549.782	Chemical Treater
549.885	Wax Molder
550.381	Painter
550.782	Mixer
550.884	Dye Weigher
550.885	Millman
551.885	Seed Processor (Grain)
554.782	Roofing Machine Operator
555.885	Grinder
556.885	Molder
557.885	Spinner
558.782	Ammonia Operator

D.O.T. Code	Job Title
559.782	Process-Operator (Chemical)
560.782	(Wood) Treating Engineer
561.885	(Wood) Treating Engineer Helper
570.887	Batch Mixer
573.782	Kiln Operator
575.884	Caster
579.884	Fiberglass Winding Machine Operator
579.885	Glass Mold Polisher
582.183	Carpet Dyer
582.782	Dye Range Operator
584.782	Coating Machine Operator
585.885	Shearing Machine Operator
586.885	Hat-Forming Machine Operator
589.130	Carpet Finisher
589.885	Blending Machine Operator
599.885	Sterilizer
600.000	Machine Setup Operator
601.280	Tool-and-Die Maker
601.387	Plastic Tool Maker
605.885	Milling Machine Operator
609.131	Inspecting Foreman
609.684	Inspector
609.782	Tape Control Machine Operator (Numerical Control)
613.782	Finisher (Steel)
616.380	Setup Man
619.885	Machine Operator
620.384	Tester
627.281	Machinist Apprentice Linotype
641.886	Printer Slotter Feeder
643.782	Corrugator Operator
643.886	Corrugator Helper
649.782	Cutting Machine Operator
650.885	Teletype Setter
651.885	Platen Press Feeder
652.885	Capping or Embossing Machine Operator
653.886	Folding Machine Operator
654.782	Type Maker
659.130	Foreman Printshop
663.885	Molder
667.782	Saw Mill Worker
669.587	Grader
669.886	Box Plank Machine Operator
680.885	Pin Drafter Operator
683.782	Weaver
685.885	Knitting Machine Operator
689.584	Carpet Inspector
689.885	Slicing Machine Operator
690.782	Extruder Operator
690.885	Cutter
692.885	Palletizer or Zipper Machine Operator
699.138	Production Foreman

D.O.T. Code	Job Title
699.887	Helper Machine Shop
704.884	Engraver
706.781	Assembler (Machinery Manufacturer)
710.281	Electro-Mechanical Technician
711.884	Grinder (Lens)
712.381	Dental Technician
712.781	Leather Worker Surgical
713.884	Lens Generator
724.884	Coil Winder
724.887	Coil Finisher
726.381	X-Ray Operator
729.287	Electric Tool Repairman
735.887	Stone Setter
739.781	Casket Assembler
750.884	Tire Retreader
750.885	Tire Buffer
754.381	Fabricator, Rubber or Plastics
754.884	Laminator
754.887	Form Repairman
759.887	Rubber Goods Trimmer
761.381	Layout Man Boat Maker
762.887	Plywood Builder
769.781	Mold Maker
771.281	Stone (Monument) Carver
772.381	Glass Tube Bender
774.884	Finisher (Refraction)
780.884	Cushion or Mattress Maker or Edging Machine Operator
782.884	Weaver Hand
787.885	Tufting Machine Operator
787.885	Sewing Machine Operator
789.685	Inspector Trimming Material
789.781	Saddle Maker
789.887	Bag Cutter
805.281	Boiler Maker
806.781	Trailer Assembler
806.884	Car Trimmer Mech. Assembler
809.687	Inspector Furniture
809.887	Helper Manufacturing
819.781	Fit-Up Man
819.887	Welder's Helper
840.884	Painter Brush
844.887	Vibrator Operator
851.884	Batterboard Setter
852.884	Cement Mason
853.782	Asphalt Plant Operator
859.281	Blaster
859.883	Operating Construction Engineer
859.885	Crusher Operator
859.887	Oiler Helper
860.887	Carpenter Helper
861.381	Marble Setter

D.O.T. Code	Job Title
863.884	Insulation Worker
865.781	Glazier
869.884	Awning Hanger
891.138	Maintenance Foreman
899.884	Maintenance Helpers
909.137	Rigger
914.885	Dredge Operator
919.883	Motorman
920.380	Machine Setup Operator
920.780	Labelling Machine Setup Man
920.885	Packager (Machine)
920.887	Packager, Meat, or Bottling Machine Operator
921.280	Craneman
922.883	Fork-Lift Operator
929.782	Console Operator
929.885	Bailing Machine Operator
930.782	Driller
930.886	Driller Helper
939.887	Quarry Worker
950.132	Refrigeration Foreman Technician
950.885	Air Compressor Operator
951.885	Fireman Boiler
953.380	Gas Plant Operator
970.884	Air Brush Operator
971.381	Cameraman, Photoengraver, or Stripper
971.782	Offset Plate Maker or Stencil Operator
973.381	Compositor, Printer or Paper Cutter
975.782	Sterotyper
977.884	Bookbinder
979.782	Blue Print Machine Operator
979.884	Silk Screening

APPENDIX I

INTERFACING SUPPLY AND DEMAND

Objective

The objective of interfacing supply and demand is to project net manpower demand in the most accurate and meaningful manner possible.

Procedure

The following steps were used to develop the interfacing:

Step 1. The interfacing format (supply vs. demand clusters) was designed jointly by the Oklahoma Employment Security Commission and the Oklahoma State Department of Vocational and Technical Education. These agencies used Vocational Education and Occupations, an interfacing developed jointly by the Office of Education and the Department of Labor, as a guide in this development and adjusted groupings to fit the Oklahoma situation.

Step 2. Demand data was provided by the Oklahoma Employment Security Commission and consultants from the Agriculture Economics Department at Oklahoma State University (see Appendix B). This data was entered on the interfacing forms by statewide total and regional breakdown. (Note: only statewide totals are shown in this report). Cluster totals were then computed for demand.

Step 3. The projected number of MDTA trainees was provided by the State Supervisor of MDTA training. This data was entered in the appropriate column of the interfacing as available supply. Although it was realized that not all MDTA trainees take employment in related fields, the sole purpose of this training is preparation for employment and it was assumed that if job openings were made available to the graduate, he would accept that employment.

Step 4. Data on projected registrants and on-job-trainees were provided by the Employment Security Commission and entered in the appropriate column on the interfacing. The Employment Security Commission indicated that some of the registrants and on-job-trainees were returning military personnel who were qualified for the occupations in question.

Step 5. It was a very difficult task to project the supply of available manpower from adult training. Several factors contributed to this difficulty including (1) programs are of varying length, ranging from one week to several years; (2) some students take only a few of the classes that make up a program and become employed; (3) many students take classes for reasons other than employment training; (4) many of the students are updating skills and knowledges and will not be available as new supply; (5) dropout rates are unknow; and (6) it is difficult to determine what programs will be offered during the coming year.

Twenty percent of the fall 1969 adult enrollment was entered in the appropriate columns on the interfacing forms as available for placement. This percentage was based on a consensus opinion by the State Director of Adult Education and the Directors of Adult Education in Tulsa and Oklahoma City. Only the fall 1969 enrollment was considered due to the length (two or more classes to develop job entry skills in most programs) of training.

Step 6. Percentages of projected supply from full-time programs were entered in appropriate columns. The percentages used were not constant for all service divisions but were varied based on follow-up data (See Appendix D) which indicated the percent of graduates from the different service divisions that would be available for employment.

Step 7. Cluster totals were computed for the supply columns.

Step 8. Net manpower requirements were computed by subtracting the supply from the demand in clusters. Negative figures are entered in parentheses.

How to Use the Interfaced Tables Showing Net Additional Manpower Requirements for 1970

The left-hand column is devoted to the listing of jobs or job clusters by Dictionary of Occupational Titles (D.O.T.) codes. The right-hand column is devoted to training programs or clusters of programs which can be most appropriately interfaced (matched) with demand. These programs refer primarily to the public training programs, although in between the job and training program listings are a series of columns devoted to demand, adjusted supply, and demand minus adjusted supply, respectively. The "adjusted" designation, as was discussed in Chapter II, refers to the percentage of graduates estimated to be available for placement in Oklahoma during the year of graduation. The first page of the interfacing is shown on page I-I-1. The tables are constructed to yield the information needed for initial planning. For example, one can refer to the first page of the statewide totals and see that the number of groundskeepers estimated to be in demand equals 183. The adjusted figure in respect of full-time public school graduates available for placement indicate a supply of 21, while the "other" column shows a supply of 27, or a total of 48. The supply of 48, subtracted from the demand of 183, leaves a remaining need of 135 shown in the "demand minus adjusted supply" column.

NET ADDITIONAL MANPOWER REQUIREMENTS
(Adjusted)

1970

STATEWIDE TOTALS

JOBS	DEMAND	ADJUSTED SUPPLY					DEMAND MINUS ADJUSTED SUPPLY	TRAINING
CLUSTERS OF OCCUPATIONS AND D.O.T. CODES		Full-Time Public	Adult Public	MDTA	Private Schools	Other**		CLUSTERS OF PROGRAMS AND INSTRUCTIONAL CODES
AGRICULTURE OCCUPATIONS % adjustment*		28.3%	20%	100%				
407.884 Grounds Keeper	199	21				27	151	010500 Horticulture
624.281 Mechanic, Farm Equipment	16	7		90				170304 Farm Engine Repair
421.883 Farm Hand, General	144							
Farm Manager, Supervisor or Owner	856							
		366				5		010300 Agriculture Mechanics
		761						010100 Production Agriculture
Total	1016	1134		90		5	(213)	Total
TOTAL AGRICULTURE OCCUPATIONS	1215	1155		90		32	(62)	
DISTRIBUTIVE OCCUPATIONS % adjustment*		40.6%	20%	100%				
250.258 Salesman, Insurance	136					57		
250.358 Salesman, Real Estate	30					2		041700 Real Estate
250 thru 259 Sales Occupations (Services)	182					26		
260 thru 289 Sales Occupations (Commodities)	1428					878		
290.000 Sales Clerk	2020					642		
292.000 Routeman	309					85		
		504						040000 Distributive Education
		35						010400 Agriculture Products

*The percent adjustment was used to determine the adjusted supply of graduates available for placement in Oklahoma.

**Includes On-Job-Training and persons registered with the Oklahoma Employment Security Commission.

NET ADDITIONAL MANPOWER REQUIREMENTS
(Adjusted)

1970

STATEWIDE TOTALS

JOBS CLUSTERS OF OCCUPATIONS AND D.O.T. CODES	DEMAND	ADJUSTED SUPPLY Full-Time Public	 Adult Public	 MDTA	 Private Schools	 Other**	DEMAND MINUS ADJUSTED SUPPLY	TRAINING CLUSTERS OF PROGRAMS AND INSTRUCTIONAL CODES
DISTRIBUTIVE OCCUPATIONS CONTINUED								
		47						010200 Agricultural Supplies/ Services
TOTAL DISTRIBUTIVE OCCUPATIONS	4105	586				1690	1829	
HEALTH OCCUPATIONS % adjustment*		79.2%	20%	100%				
079.368 Medical Assistant	39	54				16	(31)	070904 Medical Assistant (Medical Office Asst.)
219.388 Ward Clerk	109					14		
249.388 Medical-Record Clerk	65					3		
				60				079901 Ward Clerk
				30				079902 Medical Record Clerk
Total	174			90		17	67	Total
355.878 Psychiatric Aide	93					76		
355.878 Nurse Aide	1615					978		
			16	20	76			070303 Nurse Aide
Total	1708		16	20	76	1054	542	Total
078.381 Medical-Laboratory Assistant	52					16	36	070203 Medical-Laboratory Assistant
079.378 Surgical Technician	53			66		13	(26)	070305 Surgical Technician (Operating Room Technician)
079.378 Nurse L.P.N.	568	380				105	83	070302 Practical Nursing
075.378 Nurse, General Duty and Nurse Office	531					75		
075.378 Nurse, Industrial Staff	5					1		

*The percent adjustment was used to determine the adjusted supply of graduates available for placement in Oklahoma.

**Includes On-Job-Training and persons registered with the Oklahoma Employment Security Commission.

NET ADDITIONAL MANPOWER REQUIREMENTS
(Adjusted)

1970

STATEWIDE TOTALS

JOBS CLUSTERS OF OCCUPATIONS AND D.O.T. CODES	DEMAND	ADJUSTED SUPPLY Full-Time Public	 Adult Public	 MDTA	 Private Schools	 Other**	DEMAND MINUS ADJUSTED SUPPLY	TRAINING CLUSTERS OF PROGRAMS AND INSTRUCTIONAL CODES
HEALTH OCCUPATIONS CONTINUED								
		44						070301 Nursing (Associate)
Total	536	44				76	416	Total
078.368 Radiologic Technologist	41					16	25	070211 Radiologic Technology
TOTAL HEALTH OCCUPATIONS	3171	478	16	176	76	1313	1112	
HOME ECONOMICS OCCUPATIONS								
% adjustment*		27.0%	20%	100%				
319.138 Food Service Supervisor	21	28	3			5	(15)	090203 Food Management, Production and Services
785.381 Seamstress	43					22		
781.884 Cutter, Hand or Machine	23					29		
786 and 787 Sewing Machine Operator	1032					740		
		29	9					090202 Clothing Management, Production & Services (Sewing Services)
Total	1098	29	9			791	269	Total
TOTAL HOME ECONOMICS OCCUPATIONS	1119	57	12			796	254	
OFFICE OCCUPATIONS % adjustment*		47.9%	20%	100%	48%			
213.782 Tabulation-Machine Operator	81					25		
213.582 Keypunch Operator	512				116	122		

*The percent adjustment was used to determine the adjusted supply of graduates available for placement in Oklahoma.

**Includes On-Job-Training and persons registered with the Oklahoma Employment Security Commission.

NET ADDITIONAL MANPOWER REQUIREMENTS
(Adjusted)

1970

STATEWIDE TOTALS

JOBS	DEMAND	ADJUSTED SUPPLY					DEMAND MINUS ADJUSTED SUPPLY	TRAINING
CLUSTERS OF OCCUPATIONS AND D.O.T. CODES		Full-Time Public	Adult Public	MDTA	Private Schools	Other*		CLUSTERS OF PROGRAMS AND INSTRUCTIONAL CODES
OFFICE OCCUPATIONS CONTINUED								
213.382 Card-Tape-Converter Operator	18					4		
		140	11					140202 Keypunch Operators and Peripheral Equip. Operators (Unit Record)
Total	611	140	11		116	151	193	Total
201.368 Secretary	1311		57		204	445		140702 Secretary
202.388 Stenographer	929		34	110	64	216		140703 Stenographer
205.368 Personnel Clerk	110					29		
206.388 Records Custodian	1					8		
210.388 Bookkeeper (Hand)	563					437		
215.388 Bookkeeping Machine Operator	355					77		
219.388 Rater	5					4		
209.388 Statement Clerk	34					11		
215.488 Payroll Clerk	143					59		
219.388 Clearing House Clerk	4					1		
219.388 General Office Clerk	1878		34		200	1221		140303 General Office Clerk
209.388 Clerk-Typist	1117					521		
219.388 Interest Clerk	13							
217.388 Transit Clerk	24					9		
219.388 Sorting Clerk	40					2		
249.368 New Account Clerk	63					11		
249.368 Claims Clerk	30							
249.368 Credit Clerk	11					29		
219.488 Accounting Clerk	482					91		

*Includes On-Job-Training and persons registered with the Oklahoma Employment Security Commission.

NET ADDITIONAL MANPOWER REQUIREMENTS
(Adjusted)

1970

STATEWIDE TOTALS

JOBS	DEMAND	ADJUSTED SUPPLY					DEMAND MINUS ADJUSTED SUPPLY	TRAINING
CLUSTERS OF OCCUPATIONS AND D.O.T. CODES		Full-Time Public	Adult Public	MDTA	Private Schools	Other**		CLUSTERS OF PROGRAMS AND INSTRUCTIONAL CODES
OFFICE OCCUPATIONS CONTINUED								
219.485 Currency Sorter	3							
219.488 Insurance Checker	5					4		
242.368 Room Clerk	56					31		
211.368 Cashier	335					290		
212.368 Teller	171					59		
		724						140000 Cooperative Office Education
Total	7683	724	125	110	468	3555	2701	Total
160.188 Accountant	383				153	61	169	140101 Accountant
TOTAL OFFICE OCCUPATIONS	8677	864	136	110	737	3767	3063	
TECHNICAL OCCUPATIONS % adjustment*		27.2%	20%	100%	40%			
001.281 Draftsman, Architectural	21	3				8		160103 Architectural Tech. (Building Construction)
003.281 Draftsman, Electrical	9					1		
003.281 Draftsman, Electronic	10					2		
010.281 Draftsman, Geological	17					1		
017.281 Draftsman, Map	6					20		
005.281 Draftsman, Civil	36					7		
007.281 Draftsman, Mechanical	119					32		
		106	11					160198 Drafting and Design
		193	14		78			171300 Drafting
Total	218	302	25		78	71	(258)	Total

*The percent adjustment was used to determine the adjusted supply of graduates available for placement in Oklahoma.

**Includes On-Job-Training and persons registered with the Oklahoma Employment Security Commission.

NET ADDITIONAL MANPOWER REQUIREMENTS
(Adjusted)

1970

STATEWIDE TOTALS

JOBS	DEMAND	ADJUSTED SUPPLY					DEMAND	TRAINING
CLUSTERS OF OCCUPATIONS AND D.O.T. CODES		Full-Time Public	Adult Public	MDTA	Private Schools	Other*	MINUS ADJUSTED SUPPLY	CLUSTERS OF PROGRAMS AND INSTRUCTIONAL CODES
TECHNICAL OCCUPATIONS CONTINUED								
003.181 Technician, Electrical	30					9		
003.181 Technician, Electronic	85					43		
600.280 Instrument Maker	5							
		116	13		61			160108 Electronics
Total	120	116	13		61	52	(122)	Total
003.281 Technician, Instrumentation	13					4		160112 Instrumentation Technology
		1	11		9		(12)	
005.181 Technician, Civil Engineering	109					2		
018.188 Surveyor	28					9		
		10						160106 Civil Technology (Construction Technology)
Total	137	10				11	116	Total
019.281 Technician, Quality Control	82					8		
012.288 Technician, Industrial Engineering	12					3		
		3						160111 Industrial Technology
Total	94	3				11	80	Total
029.281 Technician, Laboratory	65	7				20	38	160105 Chemical Technology
213.382 Digital Computer Operator	56					19		
219.388 Programmer, Detail	32					6		
020.188 Programmer, Business	102					26		
		141	57		219			160401 Computer Programming
Total	190	141	57		219	51	(278)	Total

*Includes On-Job-Training and persons registered with the Oklahoma Employment Security Commission.

NET ADDITIONAL MANPOWER REQUIREMENTS
(Adjusted)

1970

STATEWIDE TOTALS

JOBS	DEMAND	ADJUSTED SUPPLY					DEMAND MINUS ADJUSTED SUPPLY	TRAINING
CLUSTERS OF OCCUPATIONS AND D.O.T. CODES		Full-Time Public	Adult Public	MDTA	Private Schools	Other**		CLUSTERS OF PROGRAMS AND INSTRUCTIONAL CODES
TECHNICAL OCCUPATIONS CONTINUED								
020.188 Programmer, Scientific and Engineering	32	6				4	22	160117 Data Processing (Computer Science)
196.283 Airplane Pilot, Commercial (14%-private schools)	24				96	7	(79)	160601 Commercial Pilot Training
139.288 Writer, Technical Publications	18	1				4	13	160197 Technical Writing
168.168 Safety Man	9					1		
168.168 and 168.287 Building Inspector	5					3		
		2						160602 Fire and Safety Technology
Total	14	2				4	8	Total
007.181 Technician, Mechanical Engineering	30	19	4			6	1	160113 Mechanical Technology
TOTAL TECHNICAL OCCUPATIONS	955	608	110		463	245	(471)	
TRADE AND INDUSTRIAL OCCUPATIONS								
% adjustment*		50.2%	20%	100%	40%			
141.081 Illustrator	12					11		
141.081 Lay-Out Man, (Printing and Publishing)	19					6		
		132						170700 Commercial Art
Total	31	132				17	(118)	Total

*The percent adjustment was used to determine the adjusted supply of graduates available for placement in Oklahoma.

**Includes On-Job-Training and persons registered with the Oklahoma Employment Security Commission.

NET ADDITIONAL MANPOWER REQUIREMENTS
(Adjusted)

1970

STATEWIDE TOTALS

JOBS	DEMAND	ADJUSTED SUPPLY					DEMAND	TRAINING
CLUSTERS OF OCCUPATIONS AND D.O.T. CODES		Full-Time Public	Adult Public	MDTA	Private Schools	Other*	MINUS ADJUSTED SUPPLY	CLUSTERS OF PROGRAMS AND INSTRUCTIONAL CODES
TRADE AND INDUSTRIAL OCCUPATIONS CONTINUED								
972.382 Photolithographer	6					3		
143. Cameraman or Photographer	9					9		
		15						170900 Commercial Photography
Total	15	15				12	(12)	Total
313.131 Chef	15					12		
313.381 Cook	948					429		
		54						172902 Cook/Chef
Total	963	54				441	468	Total
316.884 Meat Cutter	154					62		
525.381 Butcher, All Round	60					21		
525.387 Grader, Meat	4							
525.884 Boner or Skinner	22					6		
					23			172903 Meat Cutter
Total	240				23	89	128	Total
373. Fireman	82					15	67	172801 Fireman Training
375. Policeman or Detective	120					8		
377. Sheriff or Bailiff	24					1		
								172802 Law Enforcement Training
Total	144					9	135	Total
705.884 Bench Grinder	33					15		
600.280 Machinist, All Round	321					48		
600.281 Machine Builder						1		
600.381 Layout Man (Machine)	30					5		

*Includes On-Job-Training and persons registered with the Oklahoma Employment Security Commission.

NET ADDITIONAL MANPOWER REQUIREMENTS
(Adjusted)

1970

STATEWIDE TOTALS

JOBS	DEMAND	ADJUSTED SUPPLY					DEMAND MINUS ADJUSTED SUPPLY	TRAINING
CLUSTERS OF OCCUPATIONS AND D.O.T. CODES		Full-Time Public	Adult Public	MDTA	Private Schools	Other*		CLUSTERS OF PROGRAMS AND INSTRUCTIONAL CODES
TRADE AND INDUSTRIAL OCCUPATIONS CONTINUED								
601.381 Template Maker	19					1		
603. thru 609. Machine Set Up Operator	118					14		
603.280 Precision Grinder	48					21		
609.885 Production Machine Tool Operator	396					64		
				240				172303 Machine Tool Operator
		121			9			172302 Machine Shop
Total	965	121		240	9	169	426	Total
615.782 Shear Operator (Power)	29					18		
615.782 Punch Press Operator	116					59		
617.280 Press Operator (Heavy Duty)	13					4		
617.380 Brake Operator (Power)	17					1		
619.380 Metal Fabricator	152					3		
619.782 Roll Operator, Sheet Metal	7					4		
804.281 Sheet Metal Worker	108					47		
809.381 Layout Man (Sheet Metal)	62					14		
		13	9					172305 Sheet Metal
Total	504	13	9			150	332	Total
620.281 Mechanic, Automobile	410					125		
223.387 Parts Clerk, Automotive	67					10		
		545	3	60	68			170302 Auto Mechanic
Total	477	545	3	60	68	135	(334)	Total

*Includes On-Job-Training and persons registered with the Oklahoma Employment Security Commission.

NET ADDITIONAL MANPOWER REQUIREMENTS
(Adjusted)

1970

STATEWIDE TOTALS

JOBS	DEMAND	ADJUSTED SUPPLY					DEMAND MINUS ADJUSTED SUPPLY	TRAINING
CLUSTERS OF OCCUPATIONS AND D.O.T. CODES		Full-Time Public	Adult Public	MDTA	Private Schools	Other*		CLUSTERS OF PROGRAMS AND INSTRUCTIONAL CODES
TRADE AND INDUSTRIAL OCCUPATIONS CONTINUED								
621.281 Flight Engineer	5							
621.281 Mechanic, Aircraft Engine	90					42		
621.281 Mechanic, Aircraft Jet Engine	78					3		
(16%-private schools)		7						160101 Aeronautical Technology
		35			89			1704[illegible] Aircraft Mechanics (Power Plant)
Total	173	42			89	45	(3)	Total
621.781 Mechanic, Aircraft Accessories	180					1		
806.381 Assembler, Aircraft Structures and Surfaces	158					29		
807.884 Assembler, Subassembly (Aircraft)	48					7		
Total (16%-private schools)	386					37	349	Total
638.281 Mechanic, Maintenance	210					72		
827.281 Appliance Repairman(Household)	39					3		
				15				170305 Sewing Machine Repairman
				12				170306 Machine Repairman
		1						170307 Maintenance Mechanic
		35		60				172100 Small Engine Repair
		27						170200 Appliance Repair
Total	249	63		87		75	24	Total
625.281 Mechanic, Diesel	100	178				25	(103)	171200 Mechanic, Diesel
633.281 Office Machine Service Man	89			40		24	25	170600 Business Mach. Repair

*Includes On-Job-Training and persons registered with the Oklahoma Employment Security Commission.

NET ADDITIONAL MANPOWER REQUIREMENTS
(Adjusted)

1970

STATEWIDE TOTALS

JOBS	DEMAND	ADJUSTED SUPPLY					DEMAND	TRAINING
CLUSTERS OF OCCUPATIONS AND D.O.T. CODES		Full-Time Public	Adult Public	MDTA	Private Schools	Other*	MINUS ADJUSTED SUPPLY	CLUSTERS OF PROGRAMS AND INSTRUCTIONAL CODES
TRADE AND INDUSTRIAL OCCUPATIONS CONTINUED								
620.281 Mechanic, Air Conditioning (Automotive)	34					4		
637.281 Mechanic, Air Conditioning and/or Refrigeration	80					29		
		38	3		57			170101 Air Conditioning and Refrigeration
Total	114	38	3		57	33	(17)	Total
650.582 Linotype Operator	25					5		
651.782 Cylinder-Press Man	27					7		
651.782 Offset Press Man	52					12		
		127						171902 Printing Press Occupations
Total	104	127				24	(47)	Total
660.280 Cabinet Maker	23					21		
669.380 Millman	31					5		
763.381 Furniture Finisher	25					11		
763.884 Furniture or Hardware Assembler	12					24		
		32						173601 Millwork and Cabinet Making
Total	91	32				61	(2)	Total
720.281 Radio & Television Repairman	19	41			34	18		171503 Radio and Television Repair

*Includes On-Job-Training and persons registered with the Oklahoma Employment Security Commission.

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NET ADDITIONAL MANPOWER REQUIREMENTS
(Adjusted)

1970

STATEWIDE TOTALS

JOBS	DEMAND	ADJUSTED SUPPLY					DEMAND MINUS ADJUSTED SUPPLY	TRAINING
CLUSTERS OF OCCUPATIONS AND D.O.T. CODES		Full-Time Public	Adult Public	MDTA	Private Schools	Other*		CLUSTERS OF PROGRAMS AND INSTRUCTIONAL CODES
TRADE AND INDUSTRIAL OCCUPATIONS CONTINUED								
823.281 Radio Mechanic, Aircraft	9					8		
828.281 Electronics Mechanic	81	70	15			20		171502 Electronics
726.781 Electronics Assembler	293	12		260		114		171506 Electronics Assembler
710.281 Instrument Man	72					6		
Total	474	123	15	260	34	166	(124)	Total
825.381 Aircraft Mechanic, Electric	52					1		
821.381 Lineman	187					36		
721.281 Electric Motor Repairman	8					3		
824.281 Electrician	228	44	36		6	52		171401 Electrician
Total	475	44	36		6	92	297	Total
807.381 Automobile Body Repairman	117					20		
845.781 Painter, Automobile	32					3		
		164			15			170301 Auto Body
Total	149	164			15	23	(53)	Total
810.782 Welding Machine Operator	55					18		
810.884 and 812.884 Welder	582			220		284		
816.782 Flame Cutting Machine Operator	19					2		
816.884 Flame Cutter, Hand	13					6		
		98	25		62			172306 Welding
Total	669	98	25	220	62	310	(46)	Total
520.782 Dough Mixer	3							
526.781 Baker	62					22		

*Includes On-Job-Training and persons registered with the Oklahoma Employment Security Commission.

NET ADDITIONAL MANPOWER REQUIREMENTS
(Adjusted)

1970

STATEWIDE TOTALS

JOBS	DEMAND	ADJUSTED SUPPLY					DEMAND	TRAINING
CLUSTERS OF OCCUPATIONS AND D.O.T. CODES		Full-Time Public	Adult Public	MDTA	Private Schools	Other*	MINUS ADJUSTED SUPPLY	CLUSTERS OF PROGRAMS AND INSTRUCTIONAL CODES
TRADE AND INDUSTRIAL OCCUPATIONS CONTINUED								
		25	8					172901 Baker
Total	65	25	8			22	10	Total
741.884 Painter, Spray	72					56		
840.781 Painter, or Paperhanger	46					99		
842.884 Dry Wall Applicator	4					2		
860.381 Carpenter	340					283		
861.781 Tile Setter or Terrazzo Worker	37					6		
864.781 Floor Layer	20					2		
866,381 Roofer	27					26		
		184	12					171001 Carpenter
Total	546	184	12			474	(124)	Total
844.884 Cement Mason or Concrete Finisher	79					66		
861.381 Brick Layer	107					45		
		4	9					171004 Brick Masonry
Total -	186	4	9			111	62	Total
859.883 Heavy Equipment Operator	296			60		139	97	171003 Heavy Equip. Operator
780.381 Furniture Upholsterer	15	40		12		11	(48)	173500 Upholstering
193.168 Air Traffic Control Specialist	5					2	3	170403 Ground Operations
862.381 Plumber	120		27			74	19	171007 Heating and Plumbing
950.782 Stationary Engineer	64					24	40	173204 Boiler Operations (Stationary Engineer)
TOTAL TRADE AND INDUSTRIAL OCCUPATIONS	7791	2042	147	979	363	2806	1451	

*Includes On-Job-Training and persons registered with the Oklahoma Employment Security Commission.

NET ADDITIONAL MANPOWER REQUIREMENTS
(Adjusted)

1970

STATEWIDE TOTALS

JOBS	DEMAND	ADJUSTED SUPPLY					DEMAND	TRAINING
CLUSTERS OF OCCUPATIONS AND D.O.T. CODES		Full-Time Public	Adult Public	MDTA	Private Schools	Other*	MINUS ADJUSTED SUPPLY	CLUSTERS OF PROGRAMS AND INSTRUCTIONAL CODES
PROGRAMS FOR WHICH NO DEMAND WAS SURVEYED								
		4851**						090100 Home Economics(Useful)
		34						090201 Care and Guidance of Children
		3						160116 Petroleum Technology
		57						070101 Dental Ass't. (Dental Office Assistant)
		8						070209 Inhalation Therapy Technology
								070201 Cytology
								070910 Orthopedic Assistant
		345						170000 Industrial Cooperative Training
				329				171098 Mining Machine Operator
		12		130				171601 Dry Cleaning
								171097 Sewage Plant Operator
								172601 Barber
		213			2134***			172602 Cosmetologist
		18	6					173302 Tailor
		31	8					079900 Health Service Occupations
								010000 Vocational Agriculture Occupations Training
								160205 Ranch Operation
								160206 Forestry

*Includes On-Job-Training and persons registered with the Oklahoma Employment Security Commission.

**No percentage adjustment was made since the program is not designed to directly satisfy labor market demand.

***This figure represents 957 cosmetologists in the Oklahoma SMSA; 802 in the Tulsa SMSA; and 375 which it was not possible to distribute on a regional basis.

NET ADDITIONAL MANPOWER REQUIREMENTS
(Adjusted)

1970

STATEWIDE TOTALS

JOBS	DEMAND	ADJUSTED SUPPLY					DEMAND	TRAINING
CLUSTERS OF OCCUPATIONS AND D.O.T. CODES		Full-Time Public	Adult Public	MDTA	Private Schools	Other*	MINUS ADJUSTED SUPPLY	CLUSTERS OF PROGRAMS AND INSTRUCTIONAL CODES
PROGRAMS FOR WHICH NO DEMAND WAS SURVEYED CONTINUED								
		1						160114 Metal Technology
			7					160107 Electrical Technology
		14						090000 Cooperative Gainful Employment
								019001 Horse Shoeing
								171906 Book Binding
								010700 Forestry
OCCUPATIONS SURVEYED FOR WHICH NO PUBLIC OR PRIVATE PROGRAMS EXIST								
078.281 Medical Technologist	72					20	52	
078.368 Electrocardiograph or Electro encephalograph Technician	12					4	8	
079.368 Occupational Therapist Aide	13					7	6	
078.381 Tissue Technologist	4					2	2	
199.381 Radiographer (Industrial)	4					7	(3)	
232.368 Post Office Clerk	304					79	225	
233.388 Mail Carrier	218					59	159	
235.862 Telephone Operator (PBX)	436					212	224	
310.868 Hostess, Restaurant or Coffee Shop	65					13	52	
706.884 Assembler, Product	528					72	456	
801.781 Structural Steel Worker	107					63	44	
842.781 Plasterer	15					5	10	
899.281 Maintenance Man	69					27	42	

*Includes On-Job-Training and persons registered with the Oklahoma Employment Security Commission.

NET ADDITIONAL MANPOWER REQUIREMENTS
(Adjusted)

1970

STATEWIDE TOTALS

JOBS	DEMAND	ADJUSTED SUPPLY					DEMAND MINUS ADJUSTED SUPPLY	TRAINING
CLUSTERS OF OCCUPATIONS AND D.O.T. CODES		Full-Time Public	Adult Public	MDTA	Private Schools	Other*		CLUSTERS OF PROGRAMS AND INSTRUCTIONAL CODES
OCCUPATIONS SURVEYED FOR WHICH NO PUBLIC OR PRIVATE PROGRAMS EXIST CONTINUED								
899.381 Maintenance Man (Building)	278					85	193	
952.782 Power Plant Operator	17					3	14	
957.282 Transmitter Operator	3					3		
311.878 Waitress or Waiter	1009					831	178	
321.138 Housekeeper	222					13	209	
500.380 Plater (Electroplating)	25					5	20	
504.782 Heat Treater	15					6	9	
514.884 Caster	10					2	8	
515.782 Grinding Mill Operator	7						7	
518.381 Coremaker (Foundry)	12					5	7	
518.381 Molder, Foundry	13					10	3	
521.782 Grinder Operator (Grain and Feed Mills)	3						3	
542.281 Stillman (Petroleum Refining)	49					9	40	
549.380 Pumpman (Petroleum Refining)	8					2	6	
572.782 Batch and Furnace Man, Glass	6					4	2	
575.781 Concrete Stone Fabricator	4						4	
575.782 Brick and Tile Making Machine Operator	2						2	
575.885 Concrete Pipe Making Machine Operator	4						4	
611.782 Forging Press Operator	5						5	
612.380 Die Setter (Forging)	24						24	
575.782 Bottle Machine Operator, Glass	7						7	

*Includes On-Job-Training and persons registered with the Oklahoma Employment Security Commission.

APPENDIX J

MARCH, 1970

AN ACT RELATING TO PRIVATE SCHOOLS: REGULATING PRIVATELY OWNED CORRESPONDENCE SCHOOLS, BUSINESS SCHOOLS, FLIGHT SCHOOLS, TRADE SCHOOLS AND OTHER SCHOOLS, GIVING TRAINING IN BUSINESS, PROFESSIONAL TRADE, TECHNICAL, OR INDUSTRIAL OCCUPATIONS, AND SOLICITORS FOR SUCH PRIVATE SCHOOLS: REQUIRING LICENSES AND PERMITS AND FIXING FEES FOR ISSUANCE AND RENEWAL THEREOF, AND REQUIRING BONDS: ESTABLISHING AN OKLAHOMA BOARD OF PRIVATE SCHOOLS: PRESCRIBING POWERS AND DUTIES OF THE OKLAHOMA BOARD OF PRIVATE SCHOOLS: PRESCRIBING POWERS AND DUTIES OF STATE ACCREDITING AGENCY; MAKING APPROPRIATION TO SIAD AGENCY; PROVIDING FOR ENFORCEMENT; PROFIDING FOR JUDICIAL REVIEW; CREATING A PRIVATE SCHOOL FUND; REPEALING 70 O.S. 1961, §§ 1441-1443, INCLUSIVE, AND §§ 1601-1605, INCLUSIVE; FIXING EFFECTIVE DATE OF A ACT; AND DECLARING AN EMERGENCY.

BE IT ENACTED BY THE PEOPLE OF THE STATE OF OKLAHOMA:

SECTION 1. As used herein, and for the purposes of this act:

(a) The term "private school" shall mean any privately owned business school, flight school, trade school or other school offering resident or correspondence courses in the State of Oklahoma in which it gives training, for a consideration or remuneration, in any business, professional, trade, technical, or industrial occupation; but such term shall not include barber schools, beauty schools or other schools, which are regulated or licensed under or pursuant to any law of this state; except that any barber schools, beauty schools or other schools, of their own volition, may apply and be licensed if they meet the criteria for approval established by the Oklahoma Board of Private Schools. However, said licensing would not preclude such schools from complying with any present or future legislation dealing directly with such schools. For purposes of this act, the term "private school" shall not be construed to include parochial, private, or other nonpublic schools offering programs of general education, accredited by the State Board of Education or the State Board of Regents for Higher Education.

(b) The term "Agency" shall mean the State Accrediting Agency created by Section 241 of Title 72 of the Oklahoma Statutes.

(c) The term "Board" shall mean the Oklahoma Board of Private Schools created by Section 2 of this act.

SECTION 2. There is hereby created the Oklahoma Board of Private Schools which shall consist of nine (9) members of whom three (3) shall be the ex officio voting members of the Oklahoma State Accrediting Agency or their designated representatives and of whom six (6) shall be appointed by the Governor of the State of Oklahoma subject to the advice and consent of the Senate. Four (4) persons shall qualify to serve on said Board provided they at present occupy and for the past three (3) years have occupied executive or managerial positions in private schools of the type regulated under this act located in the State of Oklahoma. Two (2) persons shall qualify to serve on said Board provided they at present occupy and for the past three (3) years have occupied executive or managerial positions in business or industry, not connected with private schools. Each of the six (6) persons shall be appointed for a term of six (6) years, except that in the first year after the effective date of this act, the Governor shall appoint one member for a term of six (6) years, one member for a term of five (5) years, one member for a term of four (4) years, one member for a term of three (3) years, one member for a term of two (2) years and one member for a term of one (1) year.

SECTION 3. It shall be unlawful to establish, conduct, operate or maintain a private school or to solicit or canvass for scholarships or tuition to a private school in this state unless a private school license to operate the private school shall have been issued by the Board and is in effect. The Board shall issue a private school license upon determination that such private school meets the standards fixed by the Board except that the Board shall issue a license to any private school accredited by a regional or national accrediting agency recognized by the U.S. Office of Education without further evidence, and so long as said school is so accredited, the minimum standards referred to in Sections 7 and 8 shall not apply.

SECTION 4. It shall be unlawful for any person, acting as an agent or representative of a private school giving resident instruction or instruction by correspondence, whether such private school be located inside or outside the State of Oklahoma, to canvass or solicit prospective students in the State of Oklahoma, except on the established and legal premises of said school, for the purpose of selling to such student any scholarship or tuition in the private school, or to take payment for the same in money, notes or other evidence of indebtedness, unless the private school has been licensed under Section 3 of this act, and unless a private school solicitor's permit for such purpose has been issued to such person.

SECTION 5. Applications for a private school license or a private school solicitor's permit shall be filed with the Board in the manner and upon forms from the Board.

SECTION 6. (a) A license or permit issued under the provisions of this act shall expire one (1) year from the date of issue, but may be renewed annually if the Board determines that the private school remains in compliance with the minimum standard fixed by the Board except that the Board shall renew the license or permit of a private school accredited by a regional or national accrediting agency recognized by the U.S. Office of Education without further evidence.

(b) A license or permit shall not be valid or effective unless there shall have been filed with the Board a corporate surety bond for the sum of Five Thousand Dollars ($5,000.00), conditioned that the private school will faithfully perform its agreements and contracts with its students.

(c) A fee of One Hundred Dollars ($100.00) shall be paid to the Agency for the issuance of a license under Section 3 of this act; and a fee of Fifty Dollars ($50.00) shall be paid to the Agency for each renewal of a license. A fee of Twenty-five Dollars ($25.00) shall be paid to the Agency for the issuance of each permit under Section 4 of this act, ad a fee of Ten Dollars ($10.00) shall be paid to the Agency for each renewal of a permit. All such fees shall be deposited in a special fund which is hereby created, to be known as the Private School Fund, and which may be used and expended by the Agency to pay or reimburse expenses incurred by the Board and Agency and their respective members in carrying out the provisions of this act. The Agency may employ or fix the compensation and duties of such personnel as it deems necessary to carry out the provisions of this act, whose compensation may be paid from the Private School Fund.

SECTION 7. The Board shall fix minimum standards for private schools, which shall include standards for courses of instruction and training, qualifications of instructors, financial stability, advertising practices, and refund of tuition fees paid by students for courses of instruction or training not completed, and shall promulgate and adopt reasonable rules and regulations for the implementation of such minimum standards for the operation of private schools.

SECTION 8. A license or permit issued or renewed under the provisions of this act may, after reasonable notice to the private school an opportunity to be heard, be revoked by the Board for a failure of the private school to maintain the accreditation or the minimum standards fixed by the Board by which such private school obtained its license, or to maintain the bond required by Section 6 of this act, or for a violation of any of the rules and regulations pertaining to minimum standards of the Baord. No license or permit issued under this act shall be transferable.

SECTION 9. The Attorney General or any local prosecuting officer, at the request of the Board or on his own motion, may bring any appropriate action or proceeding in any court of competent jurisdiction for the enforcement of this act.

SECTION 10. Any action of the Board respecting the issuance, denial, or revocation of a permit pursuant to Sections 3,4,5,6, and 8 of this act shall be subject to judicial review by the District Court having jurisdiction.

SECTION 11. Any person violating any of the provisions of this act shall be guilty of a misdemanor and upon convistion shall be punished by a fine of not less than One Hundred Dollars ($100.00) nor more than Five Hundred Dollars ($500.00),or be imprisonment for a period of time not to exceed thirty (30) days.

SECTION 12. There is hereby appropriated to the State Accrediting Agency from any monies in the General Revenue Fund of the State Treasury, not otherwise appropriated, for the fiscal year ending June

30, 1971, the sum of Ten Thousand Dollars ($10,000.00) for the purpose of carrying out the provisions of this act. The sum so appropriated may, upon order of the Agency, be transferred to and deposited in the Private School Fund.

SECTION 13. Nothing in this act shall be intended to give these private schools tax exemption status except as provided by law.

SECTION 14. If any sentence, paragraph, section, or article in this act shall be found unconstitutional by the courts, the remaining portions of this act shall remain in full force and effect.

SECTION 15. 70 O.S. 1961 §§ 1441 to 1443, inclusive, and §§ 1601 to 1605, inclusive, are hereby repealed.

SECTION 16. This act shall not become operative or take effect until July 1, 1970.

SECTION 17. It being immediately necessary for the preservation of the public peace, health and safety, an emergency is hereby declared to exist, by reason whereof this act shall take effect and be in full force from and after its passage and approval.

Passed the House of Representatives the 10th day of March, 1970.